Want to get more?™

Company:

SAT CONTROL d.o.o.
Poženik 10
SI-4207 CERKLJE
SLOVENIA – EUROPEAN UNION

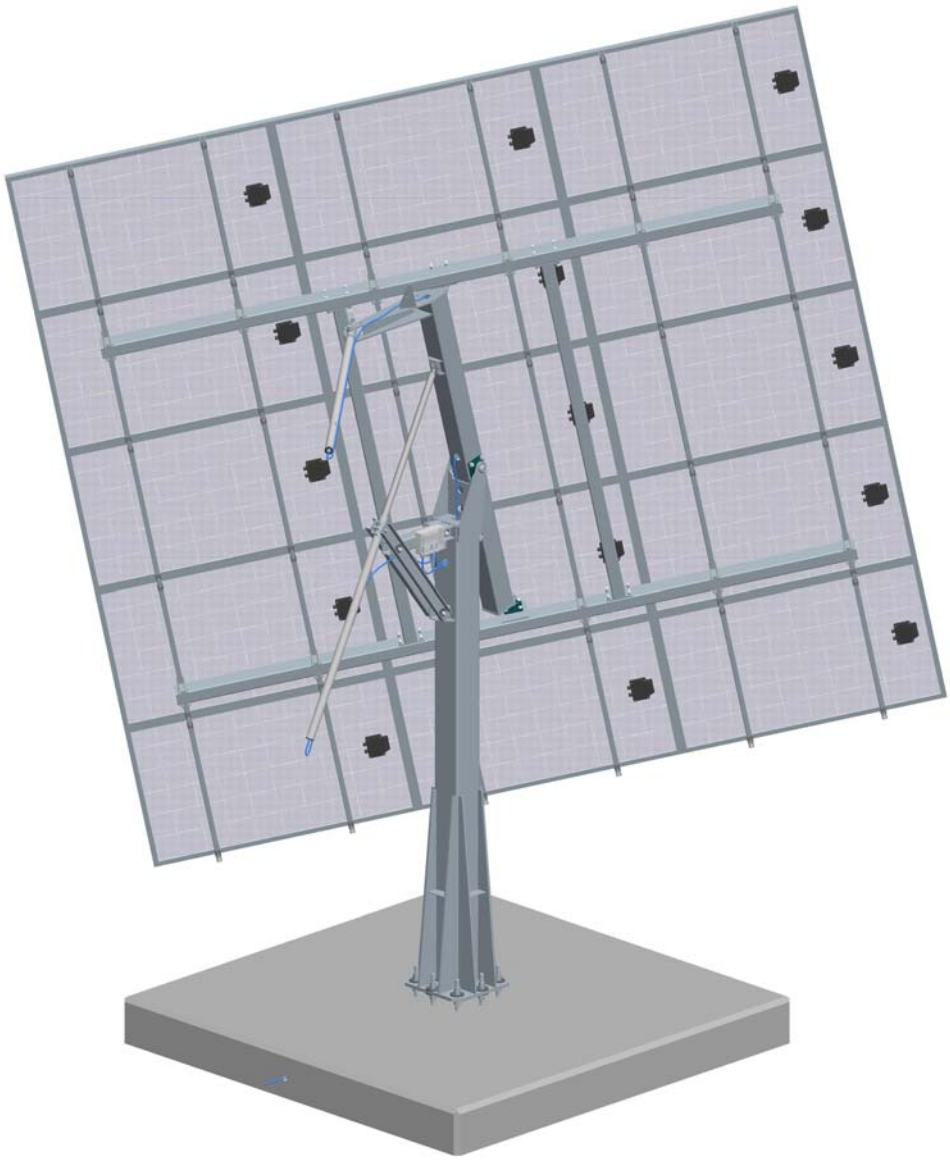
Web site: www.solar-motors.com e-mail: info@solar-motors.com

INSTRUCTIONS FOR INSTALATION AND USE

For: SOLAR TRACKER DUAL AXIS SM44M3V15P FOR 15 PANELS DIM 990X1650 MM OR 25M^2

Model: SM44M3V15P

Code: 3 831063 901532



Date: 01-08-2011
Design approved by:
Director BOLKA BOGDAN ing.

COPYRIGHT ALL DRAWINGS! CONFIDENTIONAL ALL DRAWINGS!

CAD DRAWING DISCLAIMER

CAD terms of use

All intellectual property rights (including, without limitation, all copyright and design rights) subsisting in the CAD drawings and related information belongs to SAT CONTROL d.o.o..

The USER may not, under any circumstances use or allow the use of CAD drawings with any product or system other than SAT CONTROL d.o.o. products or systems.

The reproduction and use of this material is only authorised for purposes connected with the specification or use of SAT CONTROL d.o.o. products and systems. The USER of this information is authorised to reproduce and distribute exact copies or exact extracts of CAD drawings for the sole purpose of detailing, specifying, using, and promoting the use of SAT CONTROL d.o.o. products and systems.

This information may not contain the full details required for construction. It is the USER's responsibility to ensure full construction performance specifications and to ensure specification and installation of solar tracker’s products and systems are in accordance with solar tracker’s technical datasheets or publications. Appropriate expert advice should always be obtained to ensure suitability of these drawings for your specific application.

SAT CONTROL d.o.o. accepts no responsibility or liability for any loss or damage caused to the USER or any third party through any use of the CAD drawings or related information, which use contravenes these terms of use, including but not limited to, any use of the CAD drawings and related information:

•(a) with any product or system other than SAT CONTROL d.o.o. Limited's products or systems; and
•(b) where the CAD drawings and related information are modified in any way.

The USER is deemed to accept these terms of use. IF YOU DO NOT AGREE

TO THE TERMS OF USE, DO NOT USE THE SAT CONTROL D.O.O. CAD DRAWINGS.

USAGE DISCLAIMER!

Terms of USE

All drawings and all documentation are copyright by SAT CONTROL d.o.o. and is marked as “Confidentional”

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Company/Manufacturer's Name: Sat Control d.o.o.

Address: Poženik 10, SI-4207 Cerklje, Slovenia / EU

declares under its sole responsibility, that the product

Product name: Solar Tracker SM44M3V15P

Model number: SM44M3V15P

Product options: (+) All

conforms to the following directives and/or standards

- EN 55013 :97 +A12 :97 +A13 :97 +A14 :00
- EN 55020 :95 +A11 :97 +A12 :00 +A13 :00 +A14 :00
- EN61000-3-3 :97
- SIST EN 61000-3-2 :97 +A1 :99 +A2 :00
- IEC 60065 :98
- SIST EN 1990:2004 Eurocode
- SIST EN 1991-1-1:2004 Eurocode 1 - 1-1
- SIST EN 1991-1-3:2004 Eurocode 1 - 1-3
- SIST EN 1991-1-4:2005 Eurocode 1 - 1-4
- SIST EN 1993-1-1:2005 Eurocode 3 - 1-1
- SIST EN 1993-1-3:2007 Eurocode 3 - 1-3
- SIST EN 1993-1-8:2005 Eurocode 3 - 1-8
- SIST EN 1993-1-9:2005 Eurocode 3 - 1-9

Supplementary Information:

The product herewith complies with the requirements of the following Directives or standards and carries the CE-marking accordingly:

- the Electromagnetic compatibility (EMC) directive 89/336/EEC
- Low voltage equipment directive 73/23/EEC
- Basic projection standards
- Standard for guidelines and methods for checking the load of structures
- Standard of influences on the constructions - The overall impacts - Densities, self-weight, imposed loads of buildings
- Standard of influences on the constructions - The overall impacts - Snow loads
- Standard of influences on the constructions - The overall impacts - Wind loads
- Standard for design of steel structures: General rules and rules for buildings
- Standard for design of steel structures: General rules - Supplementary rules for cold-formed profiles and sheet metal
- Standard for design of steel structures: Design of joints
- Standard for design of steel structures: Mechanical weariness

CE

Signed for and on behalf of:
Director of
Sat Control d.o.o.
Bogdan Bolka

SAT CONTROL, PROIZVODNO IN TRGOVSKO PODJETJE, d.o.o. Poženik 10, 4207 Cerklje

_____
(name, function) (signature, stamp)

Place and date of issue

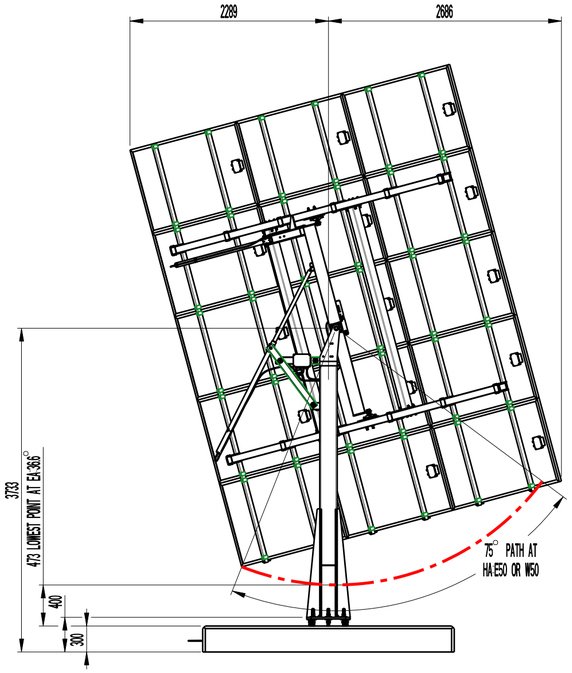
Cerklje, 1st August 2011
Update: 8th August 2012

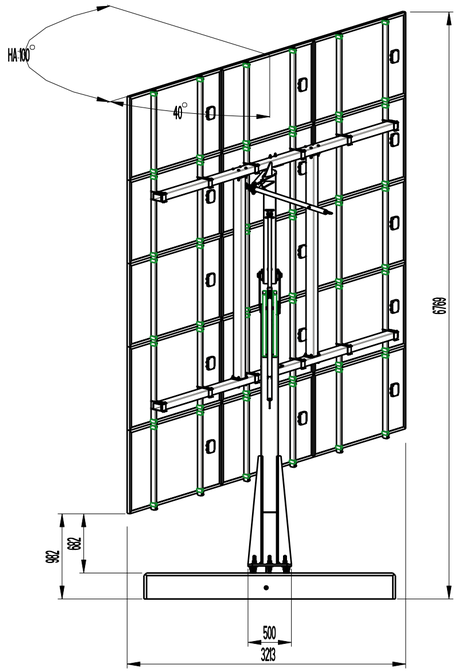
042-0811

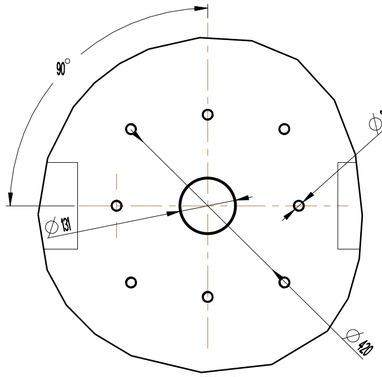
File name: Declaration of Conformity for Solar Tracker - SM44M3V15P dated 01-08-2011.doc Declaration of conformity no: .

Confidentional & Copyright !

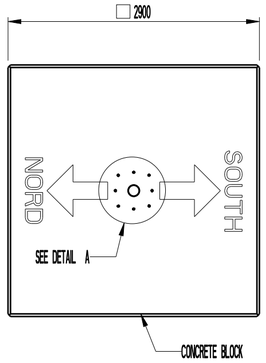
No. of class. on drw.	No. of changes:	Date:	Checked & approved by:

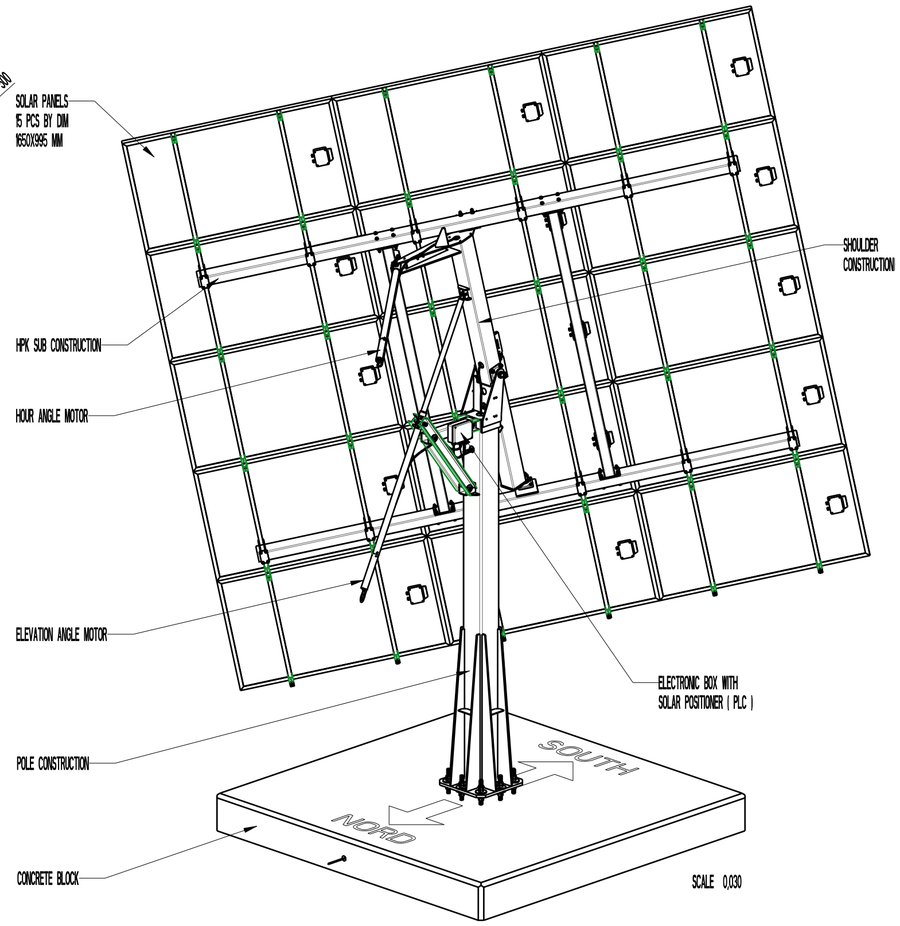




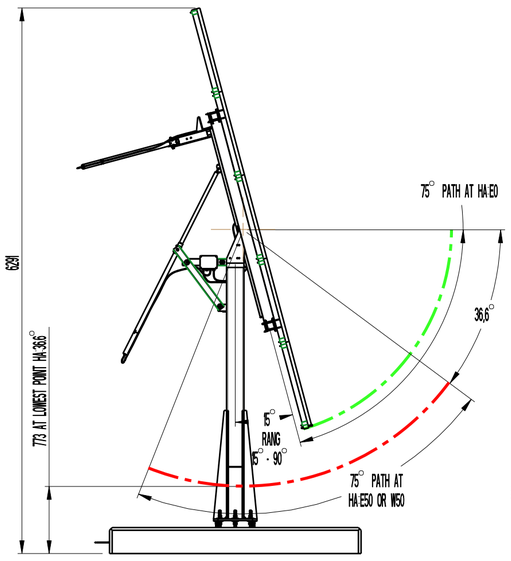


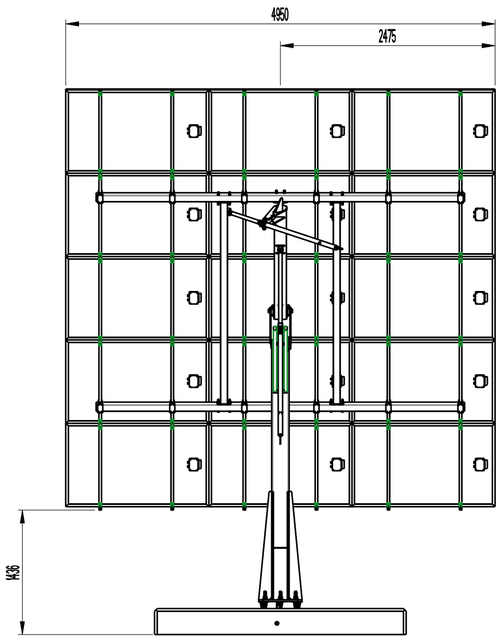
DETAIL A
SCALE 0,100
FIXATION DETAIL
FOR POLE

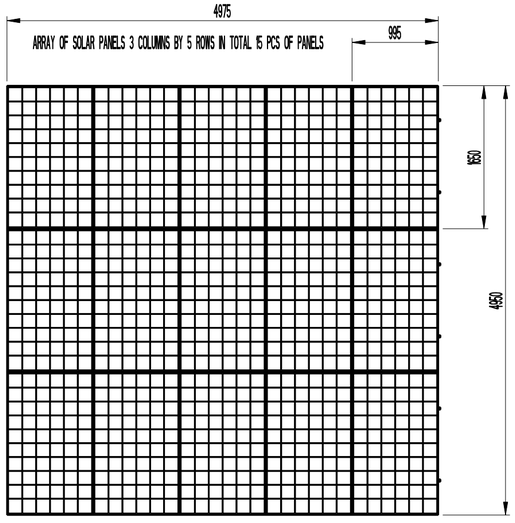


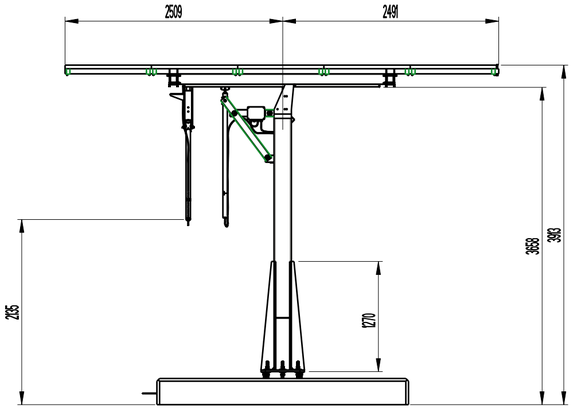


SCALE 0,030









PATH LOWEST POINT OF TRACKER AT HA E0

PATH LOWEST POINT OF TRACKER AT HA E50 OR W50

ATTENTION:
- CONCRETE BLOCK AND SOLAR PANELS ARE NOT PART OF A TRACKER, BUT HERE ARE INCLUDED FOR COMPLETE OUTLOOK
- ALLOWED WIND SPEED IN WORKING POSITION IS 70KM/H
- ALLOWED WIND SPEED IN HORIZONTAL POSITION IS 180KM/H (WIND SENSOR AND FUNCTION THAT TRACKER ORIENT BOTH AXES SO THE SOLAR PANELS ARE IN HORIZONTAL POSITION !)
- ALLOWED SNOW POSITION IS MAXIMAL VERTICAL (15°)

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Prezrok: 01.21
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J. / Bolka B.	3831063901S3		SM44M3V15P	0153-A	0,020	Mass:
Drawed by:		Checked by: / Approved by:	EAN code / standard:		Code +2:	No. of drawing:	Scale:	

SAT CONTROL "Want to see more?"
SAT CONTROL d.o.o. Prezenk 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

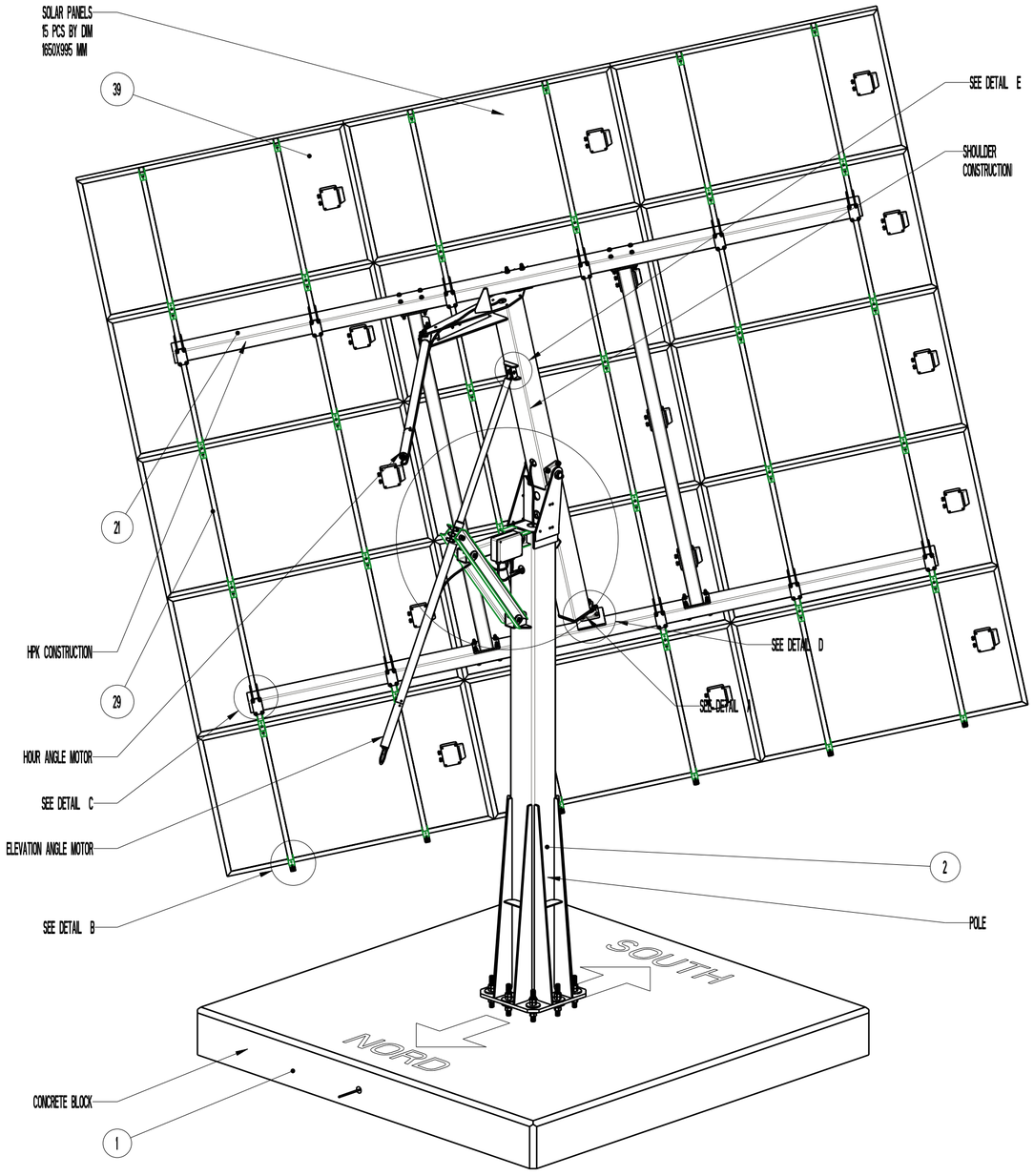
File: SOL TRA SM44M3V15P / SOL TRA SM44M3V15P

Latest version: V1

Page: V1
All rights reserved Copyright

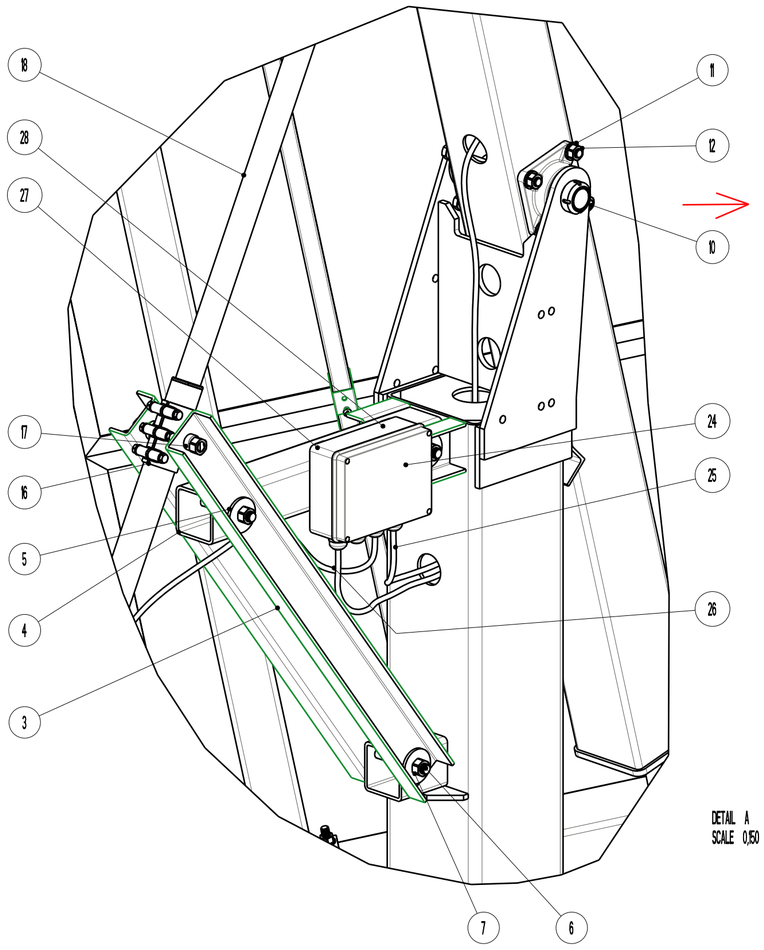
Confidentional & Copyright !

Confidentional & Copyright !

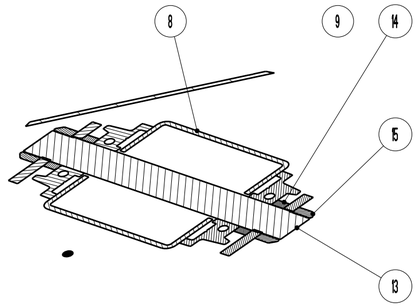


ATTENTION:

- THE CONCRETE BLOCK AND SOLAR PANELS ARE NOT PART OF SOLAR TRACKER AND ARE DESCRIPTED ONLY BECAUSE FULL OUTLOOK

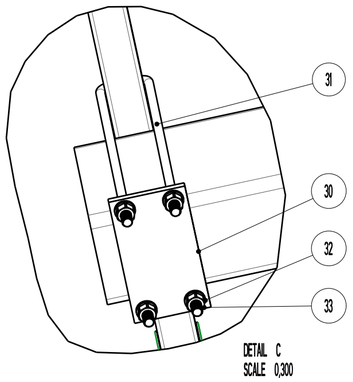


DETAIL A
SCALE 0,150

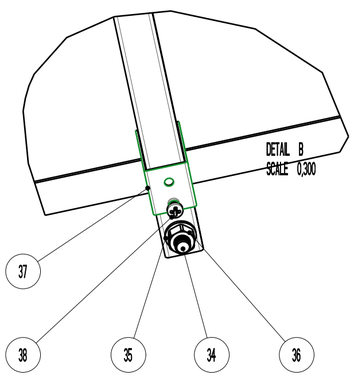


SECTION A-A
SCALE 0,300

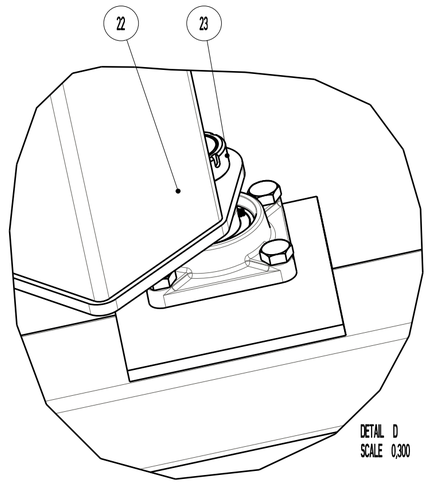
PLEASE NOTE!
CONCRETE BLOCK AND SOLAR PANELS ARE NOT PART OF SOLAR TRACKER



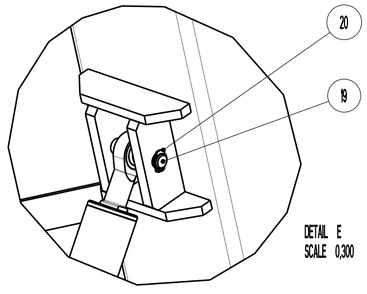
DETAIL C
SCALE 0,300



DETAIL B
SCALE 0,300



DETAIL D
SCALE 0,300



DETAIL E
SCALE 0,300

39	15	PV panel 250Wp dim 1650x995x45 mm	SPVP250W					
38	60	Screw M6x12 DIN7985 LGK	DIN7985B12Z					
37	60	Clamp - Solar toothed V12 MIDI 76,5x34,5x40	3D3D3076539					
36	6	Nut M12 DIN934 Fe/Zn 12as	DIN934M12					
35	6	Washer DIN125A M12	DIN125A12					
34	6	Hexagon screw DIN931 M12X120	DIN931M12X120					
33	48	Nut M8 DIN934 Fe/Zn 12as	DIN934M8					
32	48	Washer DIN125A M8	DIN125A8					
31	24	Hoging V-screw M8-19-2Z galvanized	3D3D3078735					
30	12	Fixation plate on tube 60x30 at HPK by SM44M3V15P	3D3D3078722					
29	6	Tube rectangular 60x30x2 L.5m hot galv	3D3D3078729					
28	4	Screw EF3x5 M8M12 dumpbolt Fe/Zn 12as	VIJEF3135A16					
27	4	Washer DIN125A M4	DIN125A4M					
26	1	Int. Cable SM4M3 w con. Tyco-OPER. L.2m 2x16x0.22	3D3D3078649					
25	1	Int. Cable SM4M3 w con. Tyco-OPER. L.5m 2x16x0.22	3D3D3078657					
24	1	Sat. Jun. Box 160x140x70 w inst. sol. prot., DIN rail, glands, cable	3D3D3078724					
23	4	Nut M28x15, rounded w slots	3D3D3078738					
22	2	Shaft HAM on shoulder and HPK of SM44M15P	3D3D3078730					
21	1	HPK subconstruction SM44M15P	3D3D3078756					
20	4	Retaining ring DIN7NC dia 12	DIN7NC12Z					
19	2	Pin OD245 w slots	3D3D3078739					
18	2	Solar Linear Actuator-Motor SIM3300BC24 w C4 clamp	3D3D3078595					
17	4	Pin M16x90 w thread and slot	3D3D3078774					
16	2	Axis of slide clamp D57x2,25 w screws for SM44D V4	3D3D3078779					
15	2	Nut M25x5 rounded w slots	3D3D3078787					
14	2	Washer D35/D9-5	3D3D3078786					
13	1	Shaft EAM of SM44M15P	3D3D3078789					
12	4	Nut M4 DIN934 Fe/Zn 12as	DIN934M4					
11	4	Washer DIN125A M4	DIN125A4M					
10	4	Hexagon screw DIN931 M4X30	DIN931M4X30					
9	2	Ball bearing with housing UCT7K20T55	3D3D3078725					
8	1	Shoulder construction for SM44M15P	3D3D3078748					
7	7	Nut M8 DIN934 Fe/Zn 12as	DIN934M8					
6	3	Hexagon screw DIN931 M8X120	DIN931M8X120					
5	6	Washer bolid M8 DIN440 ZN	DIN440M8					
4	1	Tube tor. w box holder by SM44M15P	3D3D3078780					
3	2	Fork arm holder at EAM by SM44M15P	3D3D3078744					
2	1	Pole I Pillar I bearer for SM44M15P	3D3D3078726					
1	1	Concrete basement for solar tracker SM44M15P for 15 pan 25m2	3D3D3078727					
A-Z	Quantity:	Description:	Code:					

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461	Poziomik: 04128
Position: Quantity:		Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:	Place & Date:
Bolka B.	Bolka J.	Bolka B.	383106390153		SM44M3V15P	0153-A	0,040	186703,8 g
Drawed by:	Checked by:	Approved by:	EAN code / standard:		Code 128:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-trackers.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL.TRA.SM44M3V15P / SOL.TRA.SM44M3V15P.BOM

Latest version: V1

All rights reserved Copyright

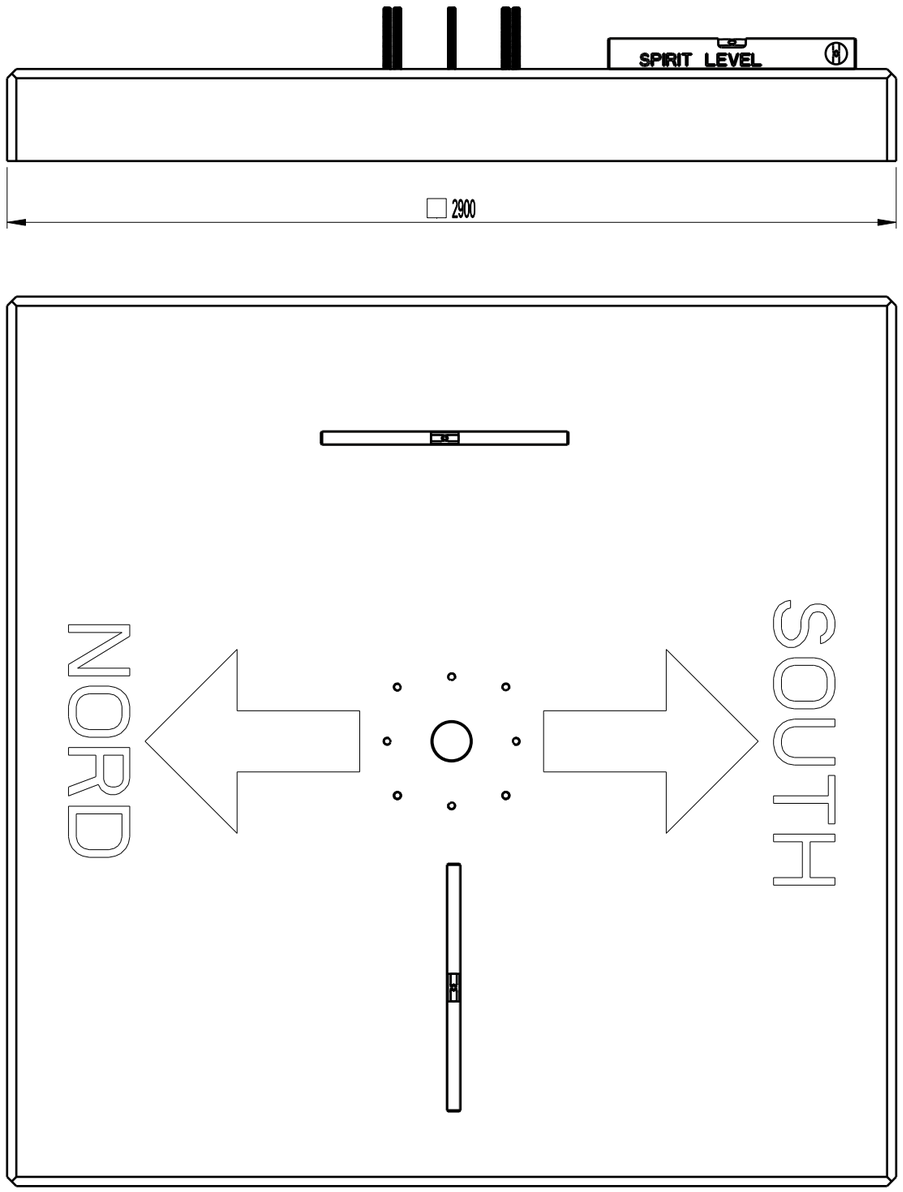
Confidentional & Copyright !

Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional ! Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of chan. on chn:	No. of changes:	Date:	Checked & approved by:

STEP 001



INSTRUCTIONS FOR INSTALATION:

1. CHOOSE THE PLACE FOR SOLAR TRACKER WHERE IS NOT SO WINDY. THE SOLAR TRACKER NEED TO TURN IN HORIZONTAL POSITION AT WIND SPEED OF 70 KM/H
NOTE THAT THE PITCH IN BETWEEN THE TRACKERS IN E-W DIRECTION IS 2 OF THE WIDTH OF PANELS IN E-W DIRECTION SO SO ARROUND 10M AND THAT THE PITCH IN BETWEEN THE TRACKERS IN N-S DIRECTION IS 2 TO 3 OF THE LENGTH OF PANELS IN N-S DIRECTION SO ARROUND 10-15M, DEPEND FROM LATITUDE OF YOUR LOCATION.

2. MAKE A GROOVE IN GROUND AND PUT ON GROUND THE PIPE FOR FOR POWER SUPPLY CABLE, LOW VOLTAGE INVERTER STRING CABLE AND RS485 COMMUNICATION CABLE.

3. PREPARE AND FORTIFY THE GROUND.

4. SETUP THE CONCRETE BLOCK ON SITE OR MAKE CONCERETE BLOCK ON SITE, BUT MAKE SURE THAT YOU POINT THE BLOCK TO SOUTH DIRECTION AS IS SHOWN IN DRAWING AND THAT THE BLOCK STAY HORIZONTALY.

THE CONCRETE BLOCK IS NOT A PART OF SOLAR TRACKER !
THE CUSTOMER NEED TO MAKE IT ON SITE OR DELIVER ON SITE !
THE INSTRUCTIONS TO MAKE IT YOU CAN FIND IT IN END OF DOCUMENT.

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 15.11.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901153		SM44M3V15P	0153-A	1:10	186783,11 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL — Want to learn more?

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL_TRA.SM44M3V15P / ASM.SM44M3V15P.S001 | Latest version: V1 | Page: 1/1

Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o.

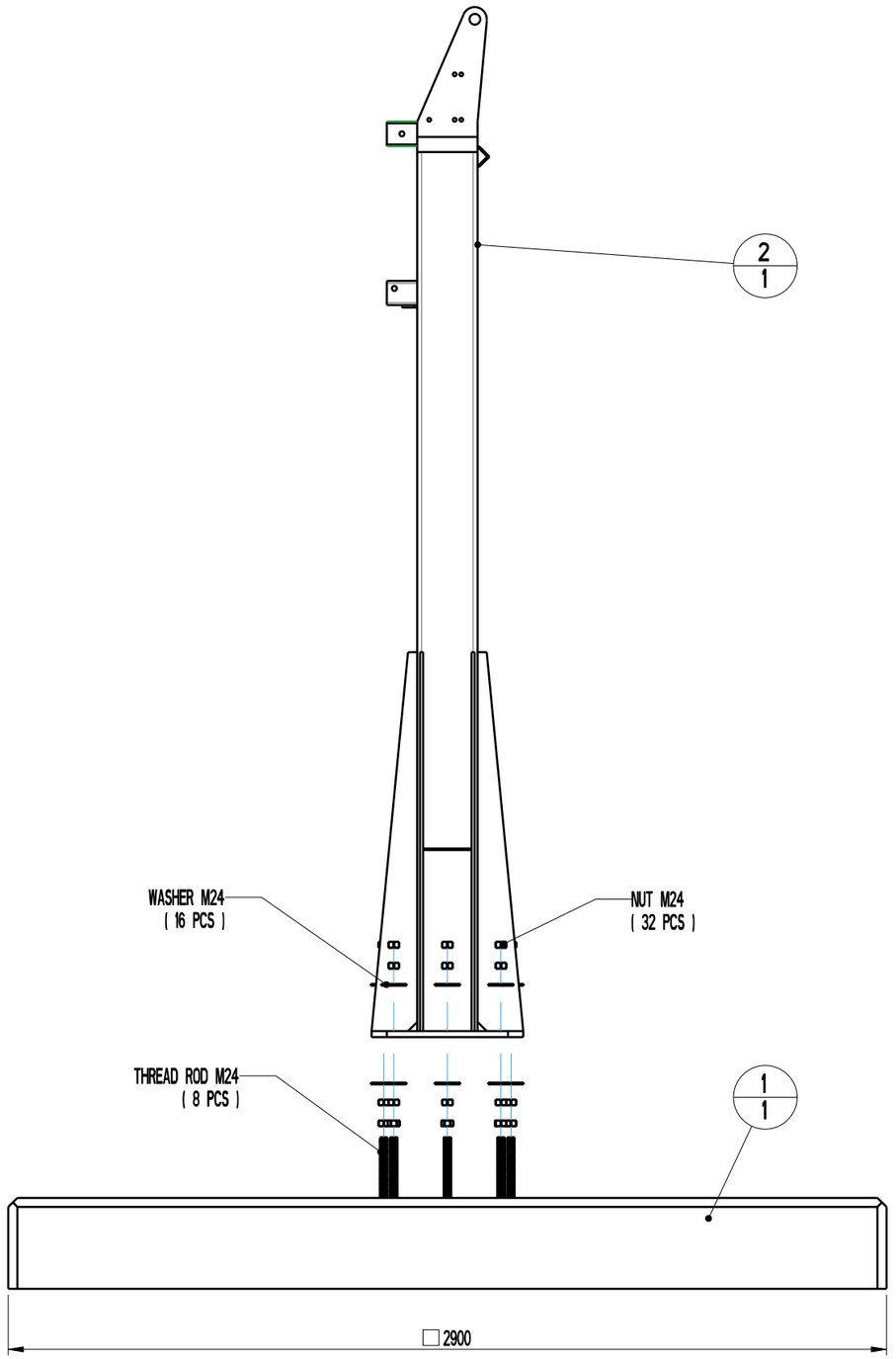
CONFIDENTIONAL !

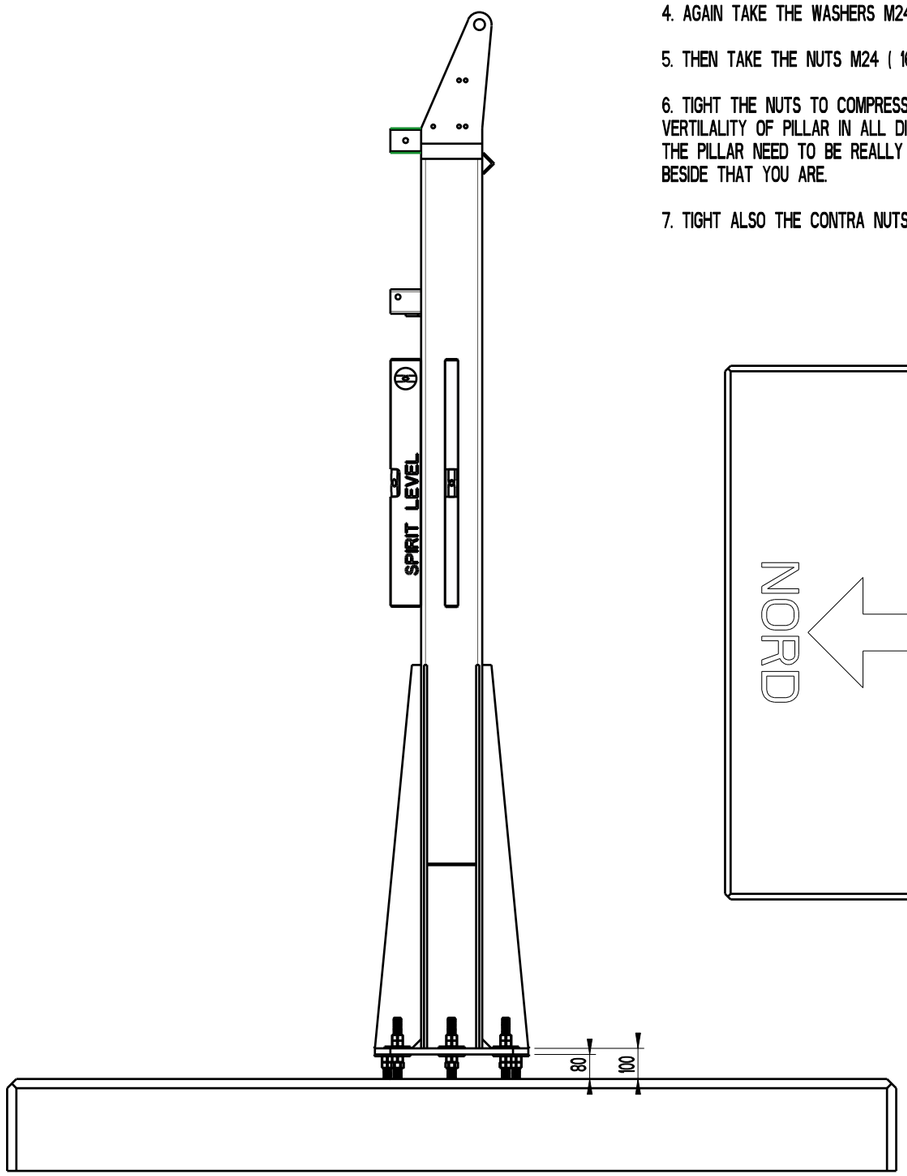
CONFIDENTIONAL !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

No. of chan. on drw:	No. of changes:	Date:	Checked & approved by:

STEP 002





INSTRUCTIONS FOR INSTALATION:

1. TAKE THE NUTS M24 (16 PCS) AND SCREEW IT ON THE THREAD BAR AS IS SHOWN IN DRAWING. ARROUND THE 100-110MM ABOVE THE CONCRETE BLOCK. YOU NEED TO MAKE THAT THE NUTS ONE AGAINST ANOTHER ARE ARE FULLY HORIZONTAL IN BETWEEN THEM. DO NOT TIGHT THE NUTS YET.

2. TAKE THE WASHERS M24 AND PUT IT ABOVE THE NUTS. (8 PCS)

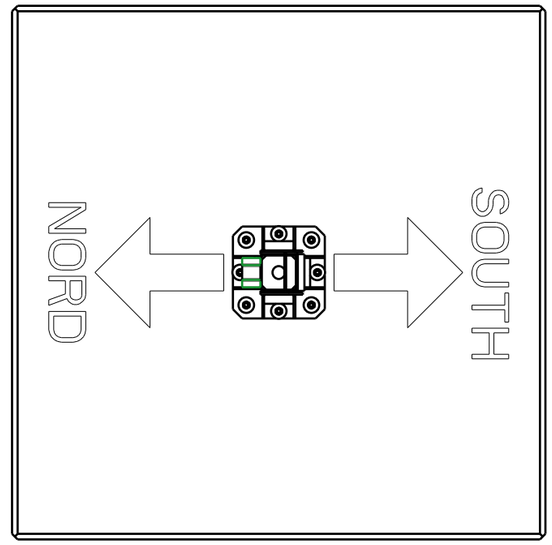
3. TAKE THE PILLAR AND PUT IT ON THE THREADED BAR M24 LIKE IS SHOWN IN THE DRAWING. DO NOT FORGET TO MOUNT IN A RIGHT DIRECTION (POINTED TO SOUTH). USE THE ELECTRONIC COMPASS

4. AGAIN TAKE THE WASHERS M24 AND PUT IT ABOVE THE PLATE. (8 PCS)

5. THEN TAKE THE NUTS M24 (16 PCS) AND SCREEW IT ON THE THREAD BAR GENTLY.

6. TIGHT THE NUTS TO COMPRESS THE PLATE IN BETWEEN, BUT IN SAME TIME CHECK THE VERTILALITY OF PILLAR IN ALL DIRECTIONS. USE THE TIGHTENING TORQUE OF 620NM. THE PILLAR NEED TO BE REALLY IN VERTICAL POSITION, SO USE THE SPIRT LEVEL FOR HELP. BESIDE THAT YOU ARE.

7. TIGHT ALSO THE CONTRA NUTS BELOW AND ABOVE. USE THE TIGHTENING TORQUE OF 620NM.



SCALE 0,030

THE CONCRETE BLOCK WITH WASHERS M24 (16 PCS) AND NUTS M24 (32PCS) TO TIGHT THE PILLAR ARE NOT PART OF SOLAR TRACKER ! HERE ARE DESCRIBED ONLY BECAUSE OF COMPLETE INSTRUCTIONS FOR INSTALATION !

A-Z:	Quantity:	Description:	Code:
2	1	Pole / Pillar / bearer for SM44M3V15P	383106387326
1	1	Concrete basement for solar tracker SM44M3V15P for 15 pan (25m2)	383106387327

Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461	Pozenik: 15.11.11	
Bolka B.		Bolka J.	Bolka B.	383106390153		SM44M3V15P	0153-A	0,050	1196783,111 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL.TRA.SM44M3V15P / ASM.SM44M3V15P.S002

Latest version: V1

Page: 1/1 All rights reserved! Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Copyright Sat Control d.o.o.

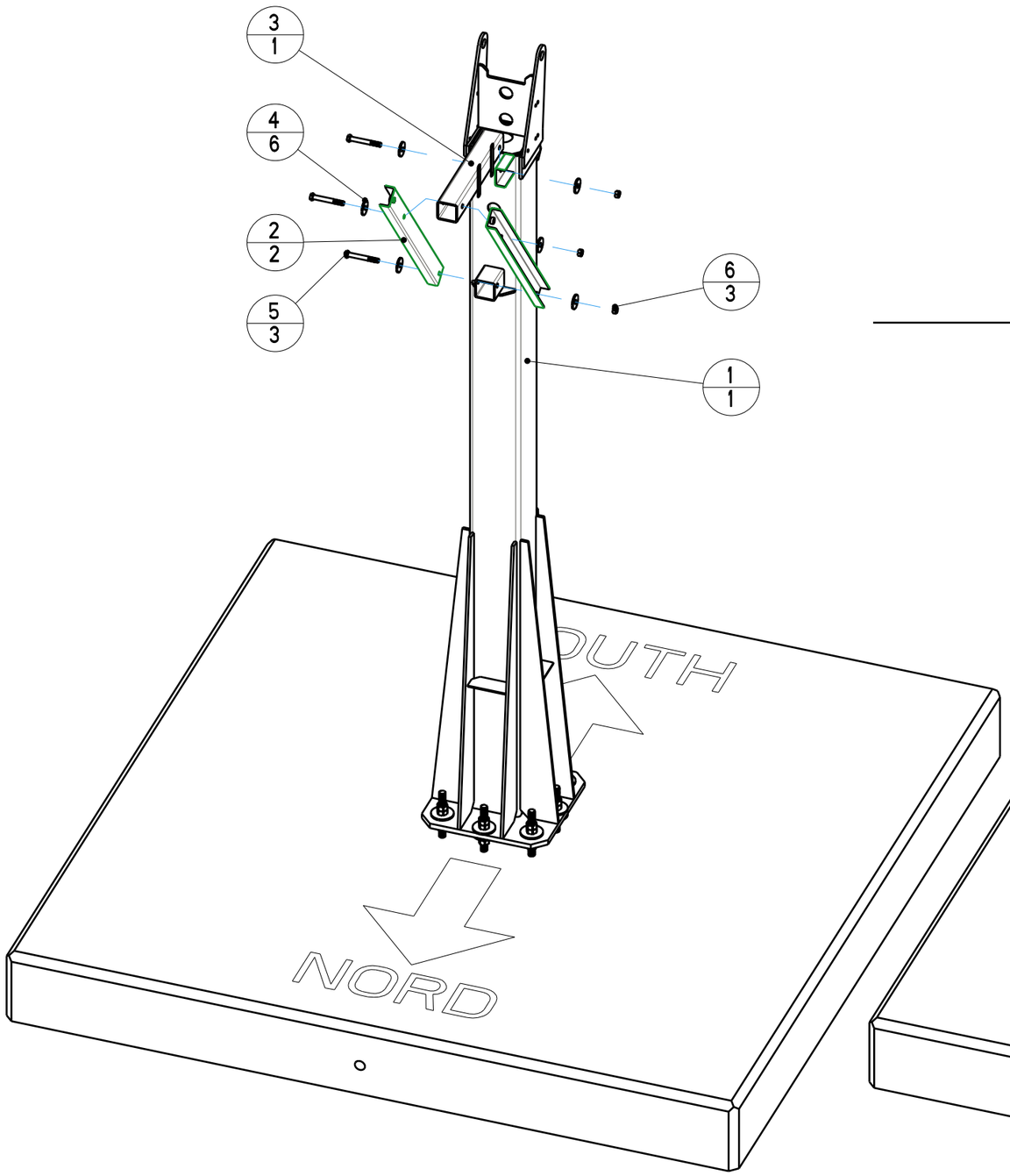
CONFIDENTIONAL !

CONFIDENTIONAL !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

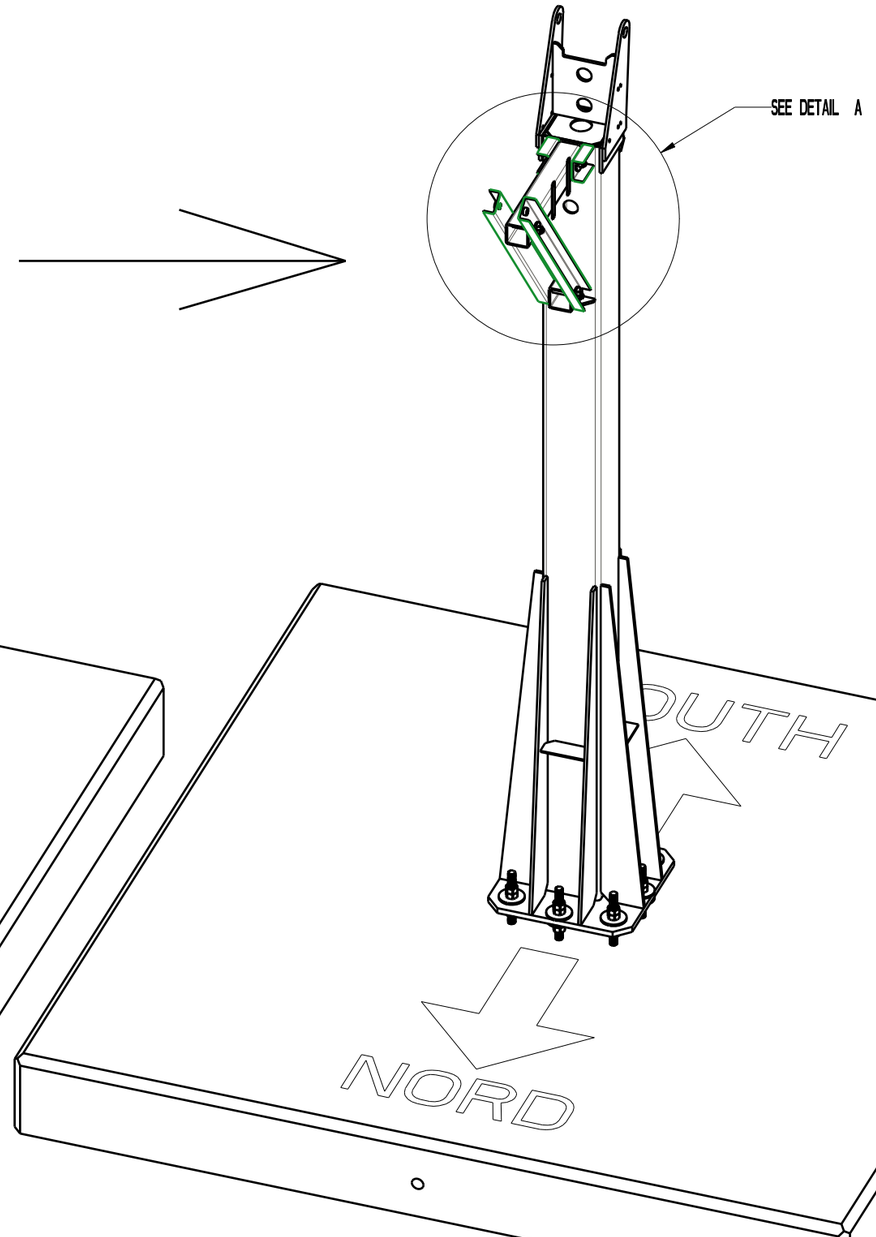
No. of chan. on chnr.	No. of changes:	Date:	Checked & approved by:

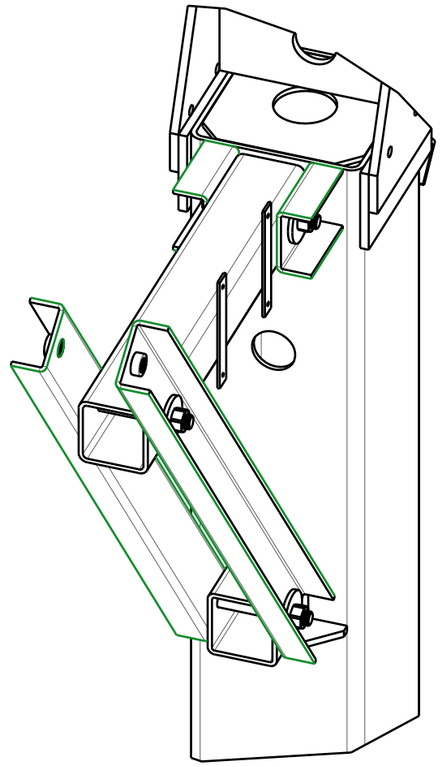
STEP 003



INSTRUCTIONS FOR INSTALATION:

1. ASSEMBLE AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW, ON THE POLE (PILLAR). SCREWS WITH NUTS TIGHT TOGETHER WITH TORQUE OF 100NM.





DETAIL A
SCALE 0,150

6	3	Nut M16 DIN934 Fe/Zn 12um	DIN934M16
5	3	Hexagon screw DIN931 M16X120	DIN931M16X120
4	6	Washer (wide) M16 DIN440R ZN	DIN440M16
3	1	Tube hor. w box holder by SM44M3V15P	38310639380
2	2	Fork arm holder at EAM by SM44M3V15P	38310639344
1	1	Pole (Pillar) bearer for SM44M3V15P	38310639326
A-Z:	Quantity:	Description:	Code:

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461	Pozenik: 17.11.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:	Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	0,050	1186783,111 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL_TRA.SM44M3V15P / ASM.SM44M3V15P.S003

Latest version: V1

All rights reserved! Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Copyright Sat Control d.o.o.

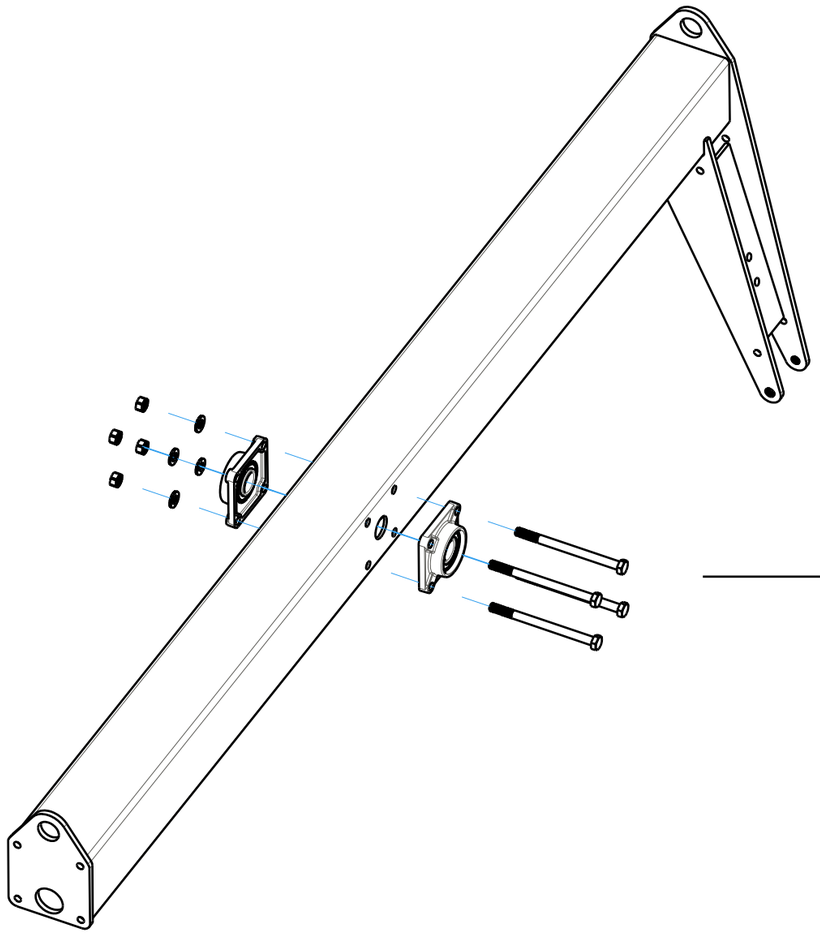
CONFIDENTIONAL !

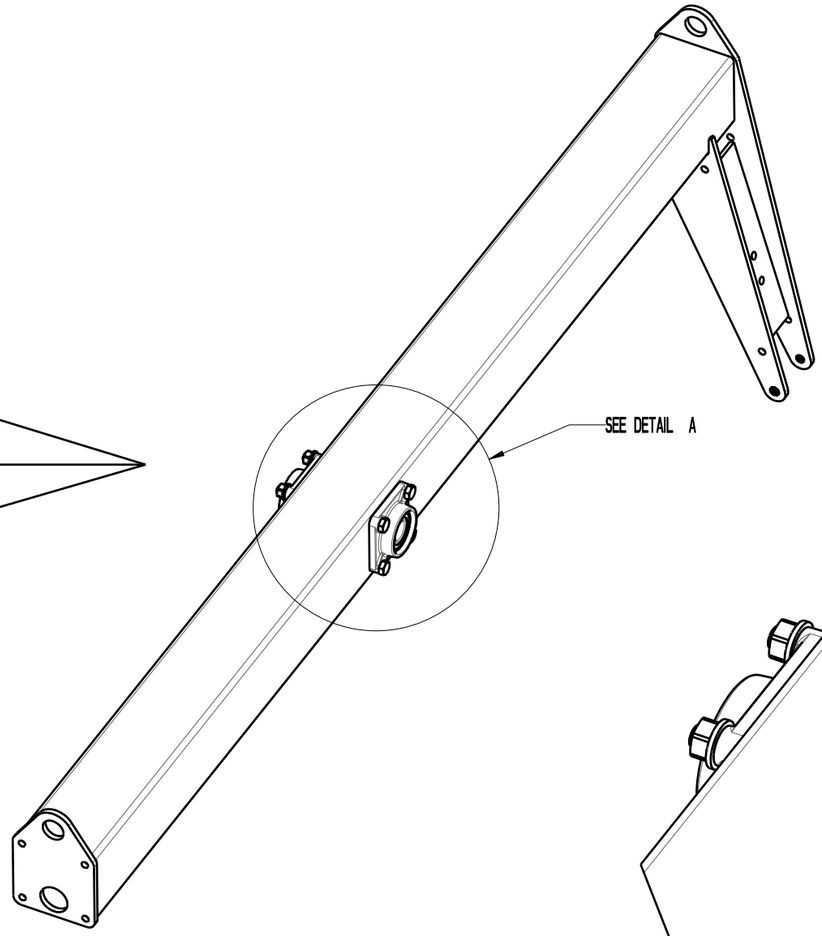
CONFIDENTIONAL !

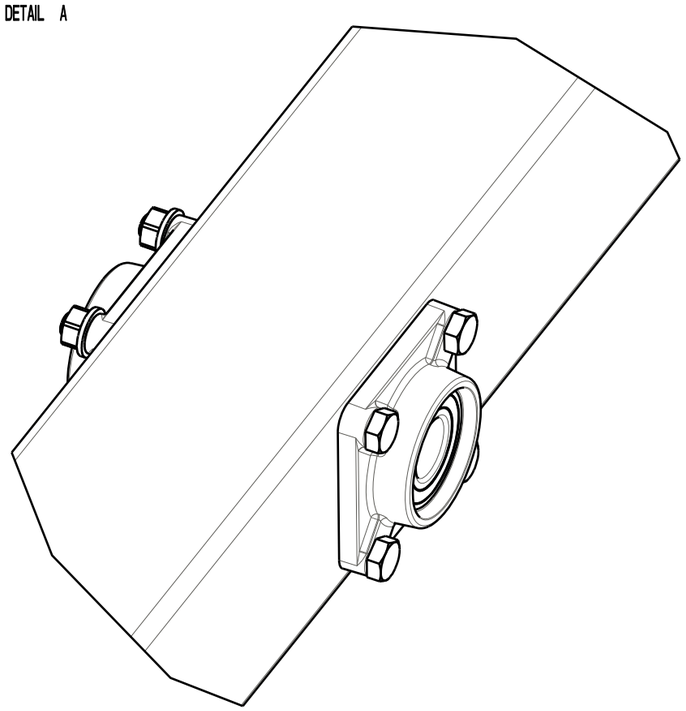
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA-EU www.sat-controls.si / info@sat-controls.si

No. of chan. on drw.	No. of changes:	Date:	Checked & approved by:

STEP 004







DETAIL A
SCALE 0,300

INSTRUCTIONS FOR INSTALATION:

1. ASSEMBLE AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW. SCREWS WITH NUTS TIGHT TOGETHER WITH TORQUE OF 100NM.

A-Z:	Quantity:	Description:	Code:
5	4	Nut M14 DIN934 Fe/Zn 12um	DIN934M14
4	4	Washer DIN125A M14	DIN125A-M14
3	4	Hexagon screw DIN931 M14X190	DIN931M14X190
2	2	Ball bearing with housing UCF76207SS	3831063973 25
1	1	Shoulder construction for SM44M3V15P	3831063973 48

Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 03.03.12
Bolka B.		Bolka J.	Bolka B.	3831063901 53		SM44M3V15P	0153-A	0,100	1185838,179 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL.TRA.SM44M3V15P / ASM.SM44M3V15P.S004

Latest version: V1

Page: 1/1

All rights reserved! Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Copyright Sat Control d.o.o.

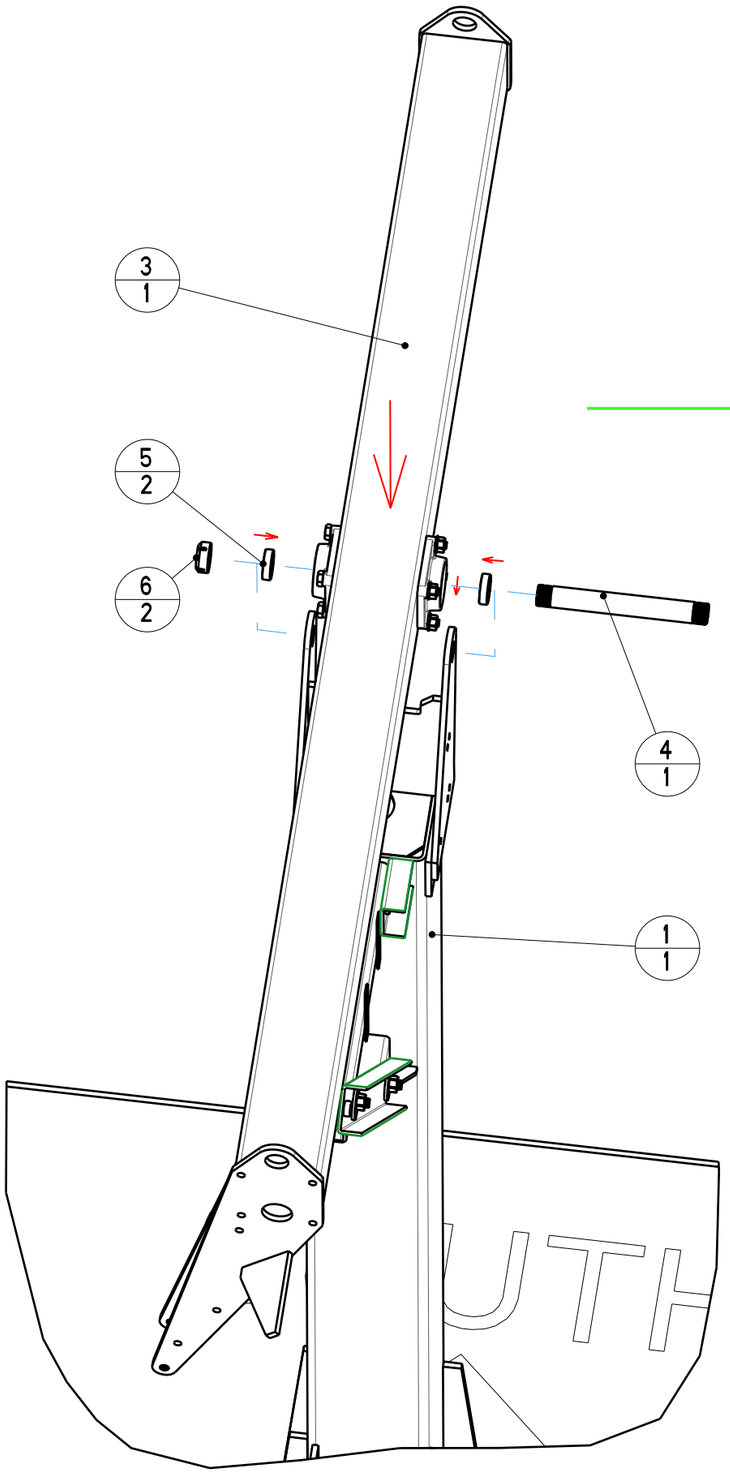
CONFIDENTIONAL !

CONFIDENTIONAL !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

No. of chan. on drw.	No. of changes:	Date:	Checked & approved by:

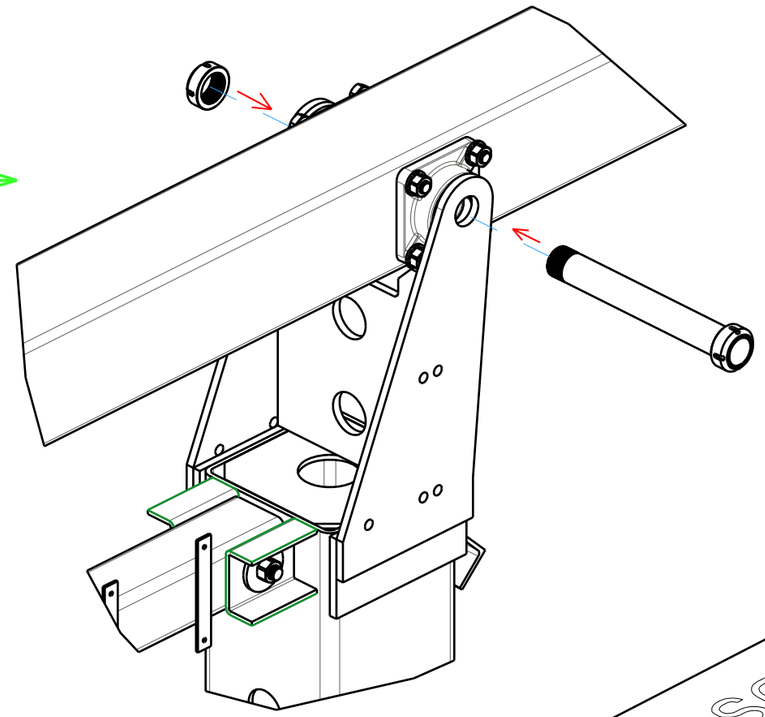
STEP 005



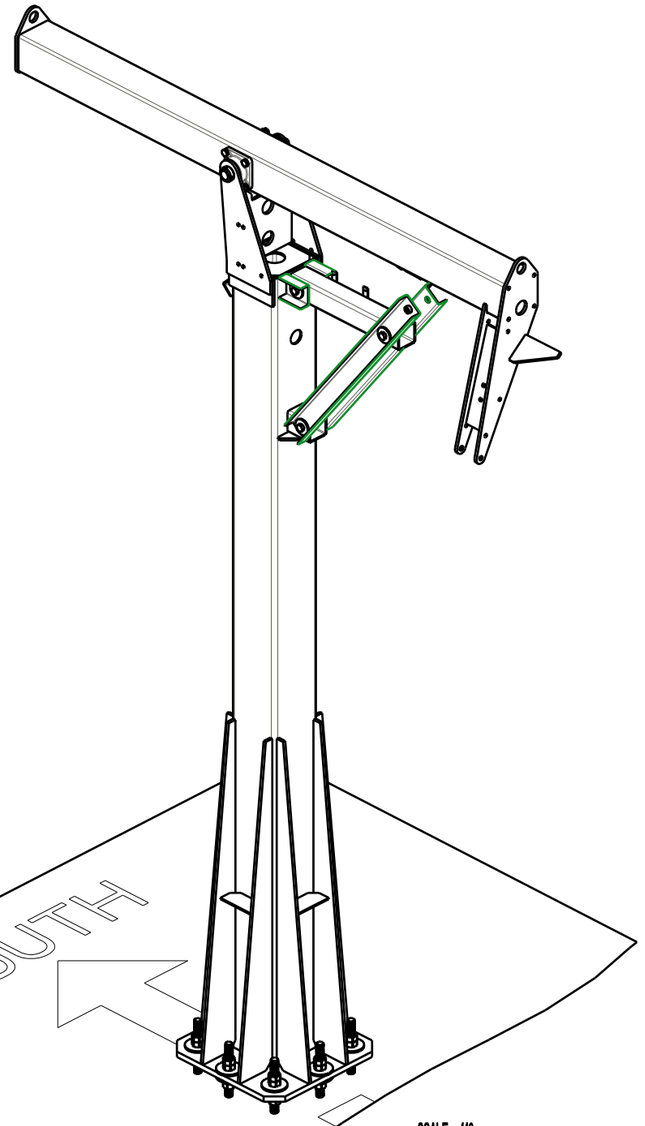
INSTRUCTIONS FOR INSTALATION:

1. ASSEMBLE AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW.
SCREWS WITH NUTS TIGHT TOGETHER WITH TORQUE OF 30NM.

NOTE: THE WASHER MUST BE INSERTED BETWEEN THE EAR FROM PILLAR AND BEARING.



DETAIL
SCALE 1:5



SCALE 1:10

6	2	Nut M35x1,5 rounded w slots	383106397367
5	2	Washer D35-D50-t3	383106397366
4	1	Shaft EAM of SM44M3V15P	383106397269
3	1	Shoulder construction for SM44M3V15P	383106397348
2	1	Tube hor. w box holder by SM44M3V15P	383106397380
1	1	Pole (Pillar) bearer for SM44M3V15P	383106397326
A-Z:	Quantity:	Description:	Code:

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 17.11.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Data:
Bolka B.		Bolka J.	Bolka B.	383106390153		SM44M3V15P	0153-A	1:10	186678,472 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code 2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL_TRA.SM44M3V15P.HA-E0.EA-90 / ASM.SM44M3V15P.S005

Latest version:	Page: 1/1
V1	All rights reserved Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Copyright Sat Control d.o.o.

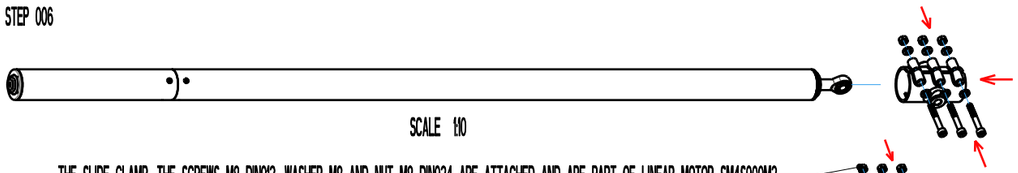
CONFIDENTIONAL !

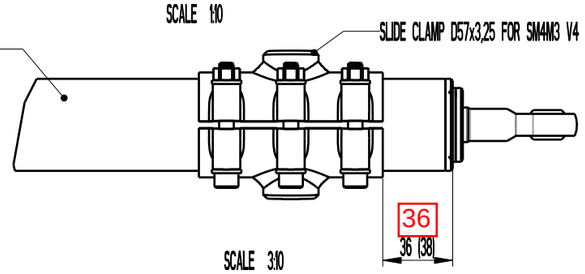
CONFIDENTIONAL !

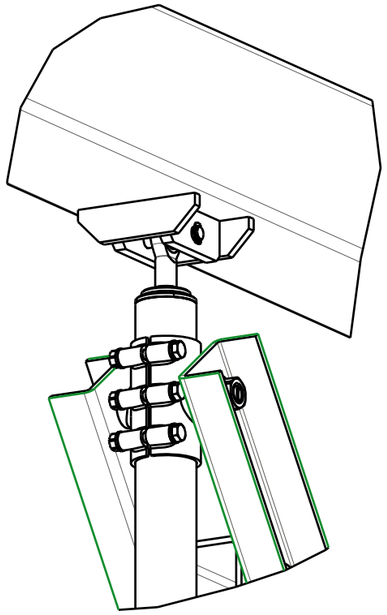
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

No. of chan. on drw.	No. of changes:	Date:	Checked & approved by:

STEP 006


SCALE 1:10
THE SLIDE CLAMP, THE SCREWS M8 DIN912, WASHER M8 AND NUT M8 DIN934 ARE ATTACHED AND ARE PART OF LINEAR MOTOR SM4S900M3.
SCALE 1:10
SCALE 1:10





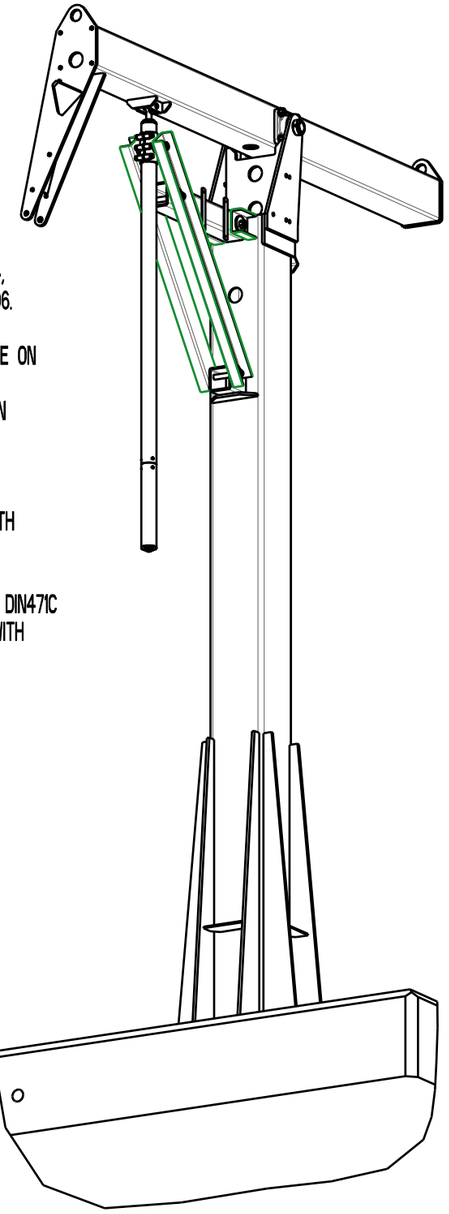
INSTRUCTIONS FOR INSTALATION:

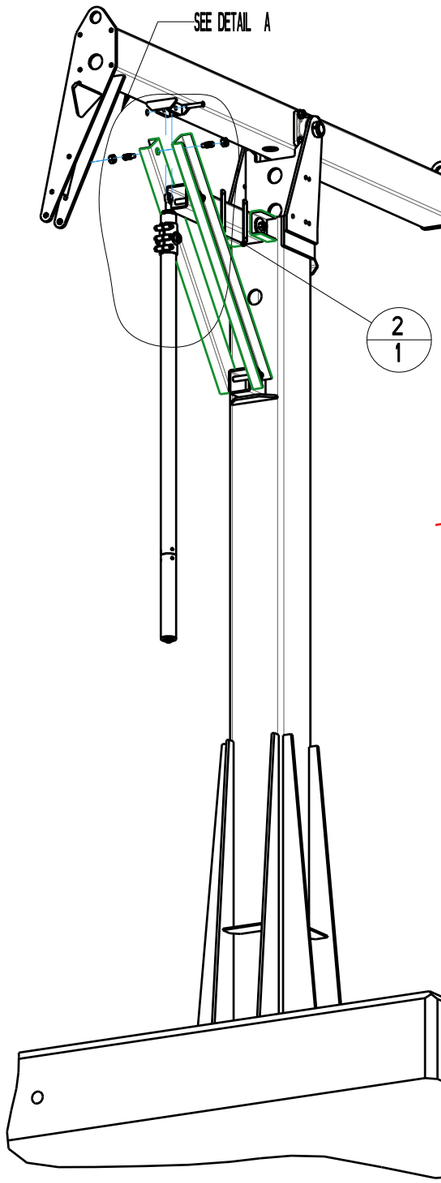
1. FIRST ASSEMBLE THE SLIDE CLAMP ON LINEAR MOTOR SM4S900M3 AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW. THE SCREW TIGHT WITH TORQUE OF 40NM. THE SCREWS M8 DIN912, WASHER M8 AND NUT M8 DIN934 ARE ATTACHED AND ARE PART OF LINEAR MOTOR SM4S900M3.

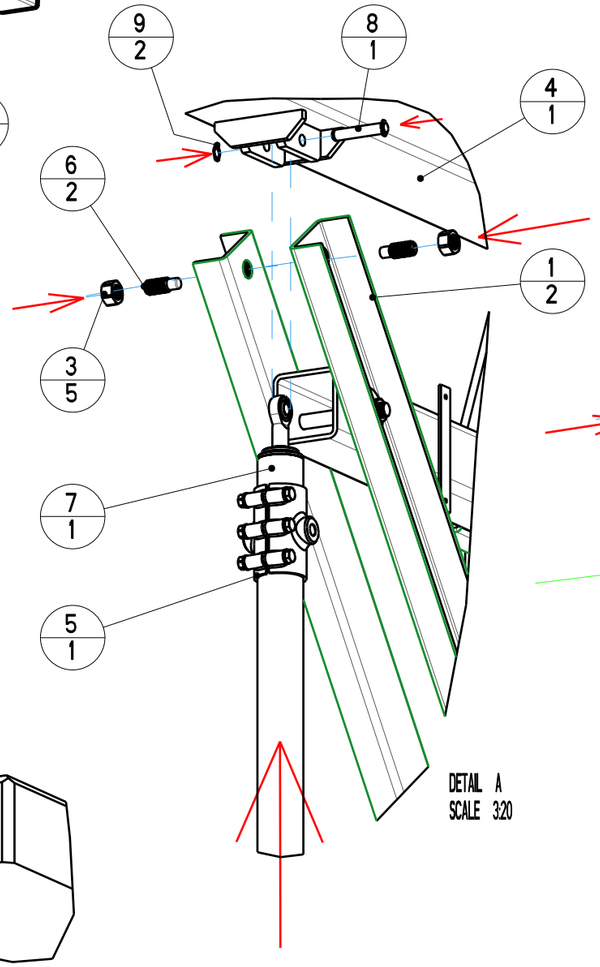
2. ASSEMBLED LIN. MOTOR ITEM 6, WITH SLIDE CLAMP ITEM 4, THEN ASSEMBLE TO A CONSTRUCTION ASSEMBLED IN STEP 006. LIKE IS SHOWN IN DETAIL A, B AND C.
2 PCS OF PIN W THREAD M16 ITEM 5 WITH A LITTLE GREASE ON YOU NEED TO SCREW INTO A NUT IN FORK ARM AND SLIDE CLAMP ITEM 4. CHECK THAT SCREW IS FULLY IN THE HOLE IN SLIDE CLAMP BUT TAKE CARE THAT THE SLIDE CLAMP WITH LIN. MOTOR STILL CAN ROTATE AROUND THE PIN.

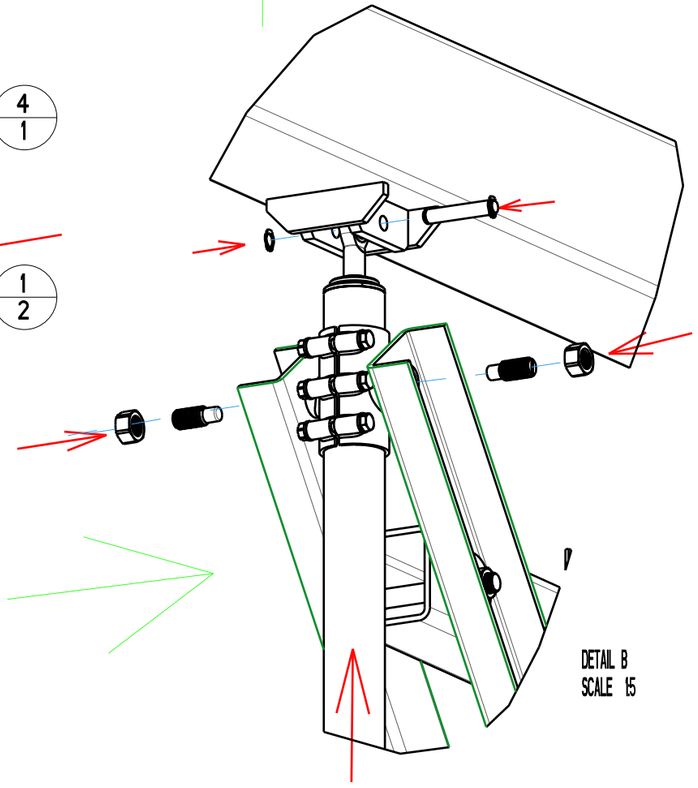
3. NUTS M16 ITEM 2 TIGHT ON PIN W THREAD M16 ITEM 5 WITH TORQUE OF 50NM.

4. PIN D12X65 ITEM 7 WITH MOUNTED ON RETAINING RING D12 DIN471C ITEM 8, ASSEMBLE AS IS SHOWN IN DETAIL B AND LOCK IT WITH RETAINGING RING D12 DIN471C ITEM 8









9	2	Retaining ring DIN471C dia: 12	DIN471C-D12
8	1	Pin D12x65 w slots	383106397369
7	1	Solar Linear Actuator-Motor SM4S900M3C4 w C4 clamp	383106390095
6	2	Pin M16x40 w thread and slot	383106397374
5	1	Asm of slide clamp D57x3,25 w screws for SM4M3 V4	383106397379
4	1	Shoulder construction for SM44M3V15P	383106397348
3	5	Nut M16 DIN934 Fe/Zn 12um	DIN934M16
2	1	Tube hor. w box holder by SM44M3V15P	383106397380
1	2	Fork arm holder at EAM by SM44M3V15P	383106397344
A-Z:	Quantity:	Description:	Code:

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 19.11.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.	Bolka J.	Bolka B.	383106390153		SM44M3V15P	0153-A	1:20	18558.88 g
Drawed by:	Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL "Want to see more?"

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL.TRA.SM44M3V15P / ASM.SM44M3V15P.S006

Latest version: V1

Page: 1/1
All rights reserved Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Copyright Sat Control d.o.o.

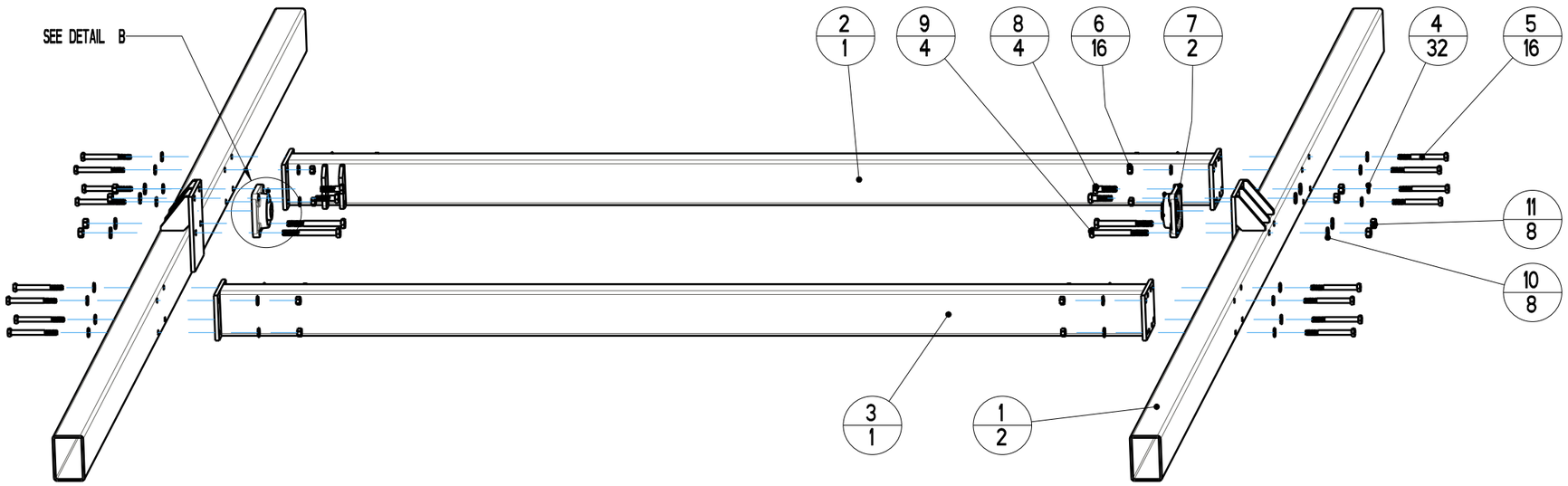
CONFIDENTIONAL !

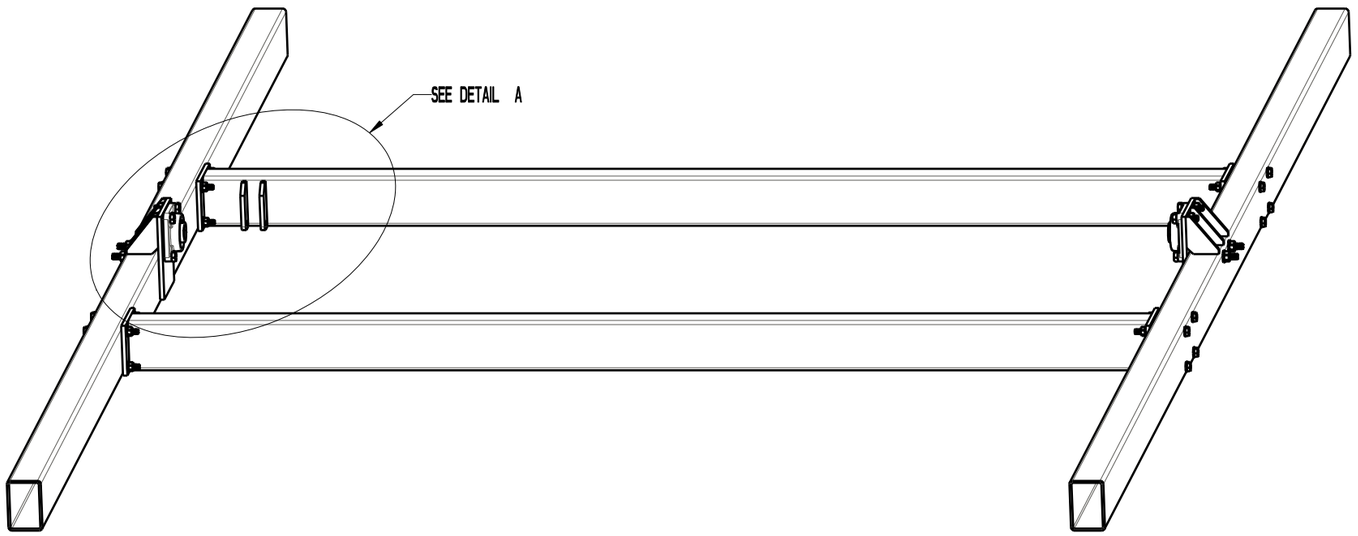
CONFIDENTIONAL !

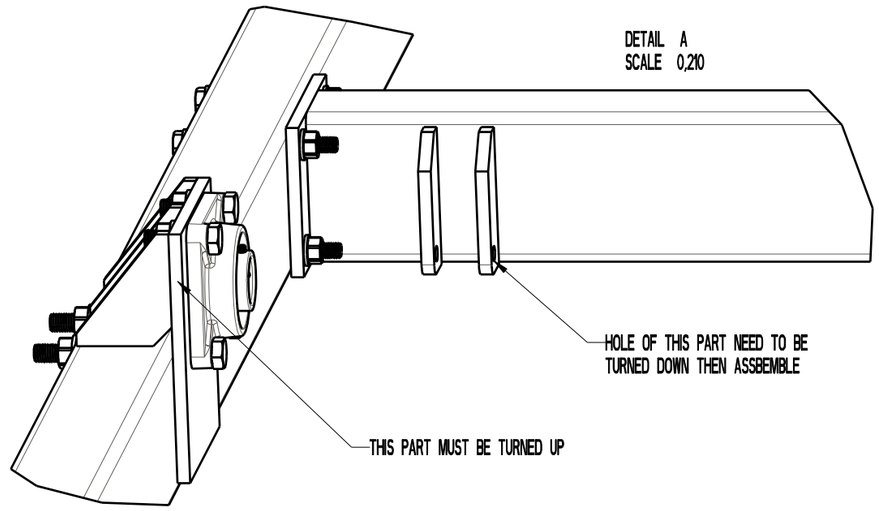
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

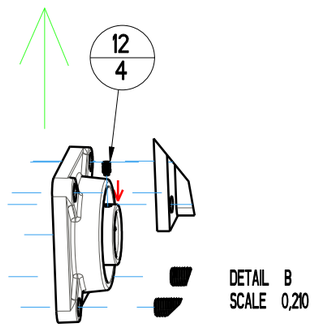
No. of chan. on chnr.	No. of changes:	Date:	Checked & approved by:

STEP 007









INSTRUCTIONS:

ASSEMBLE AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED STATE
1. THE NUTS M14 DIN982 CAN BE TIGHT WITH MAX TIGHTENING TORQUE OF 50 Nm
2. THE NUTS M12 DIN982 CAN BE TIGHT WITH MAX TIGHTENING TORQUE OF 40 Nm
3. BY THE ASSEMBLING MAKE SURE THAT THE DETAIL A IS TURNED UP AND DETAIL B IS TURNED DOWN
4. MAKE SURE THAT THE CONCTRUCTION ISN'T TWISTED AFTER ASSEMBLED, IF IS MAKE IT FLAT 100%

A-Z:	Quantity:	Description:	Code:
12	4	Socket Set Screw dog point DIN915-M6x10	VIJDIN915M6X10
11	8	Nut M14 DIN934 Fe/Zn 12um	DIN934M14
10	8	Washer DINI25A M14	DINI25A-M14
9	4	Hexagon screw DIN931 M14X140	DIN931M14X140
8	4	Hexagon screw DIN931 M14X50	DIN931M14X50
7	2	Ball bearing with housing UCF207SS	3831063972S9
6	16	Nut M12 DIN934 Fe/Zn 12um	DIN934M12
5	16	Hexagon screw DIN931 M12X120	DIN931M12X120
4	32	Washer DINI25A M12	DINI25A-M12
3	1	Asm of connection tube 2 of HPK by SM44M3VI5P	383106397359
2	1	Asm of connection tube of HPK by SM44M3VI5P	383106397358
1	2	Asm of arm bearer on HPK at SM44M3VI5P	383106397357

7356	1	Welding assembly	3080x5000x120	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461	Pozenik: 11.09.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:	Place & Data:
Bolka B.	Bolka J.	Bolka B.	383106397356		HPK.SM44M3V15P	7356-A	0,070 / 21606,681 g
Drawed by:	Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale: / Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: HPK subconstruction SM44M3VI5P

File: HPK.SM44M3VI5P / ASM.SM44M3VI5P.S007

Latest version: V1

Page: 1/1

All rights reserved! Copyright!

CONFIDENTIONAL !

CONFIDENTIONAL !

CONFIDENTIONAL !

Confidentional & Copyright !

STEP 007

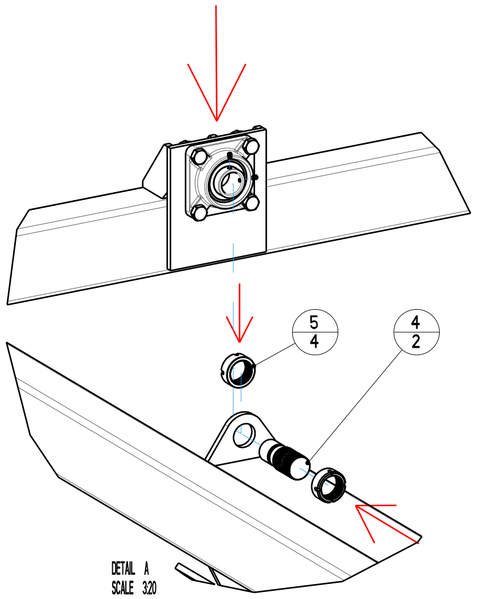
No. of class. on drw.	No. of changes:	Date:	Checked & approved by:

INSTRUCTIONS FOR INSTALATION:

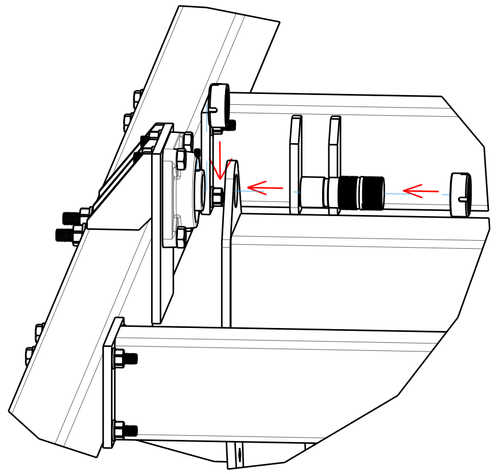
1. ASSEMBLED HPK SUBCONSTRUCTION IN PREVIOUS STEP 007 MOUNT ON CONSTRUCTION ASSEMBLED UP TO STEP 006 AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW. SEE DETAILED DRAWINGS A, B, C D.

YOU HAVE TO MOUNT SIMETRICALLY ON AND ON BOTH SIDES.
THE NUTS TIGHT WITH TORQUE OF 100NM.

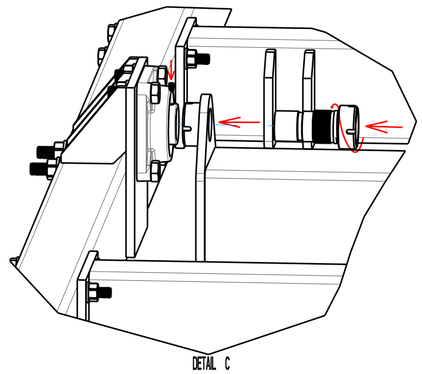
2. TIGHT SOCKET SET SCREW M6X10 DIN915 INTO A GROOVE ON SHAFT HAM ON SHOULDER - ITEM 3, TO HOLD THE HPK CONSTRUCTION ON PLACE. TH TIGHT TORQUE IS 3-5NM.



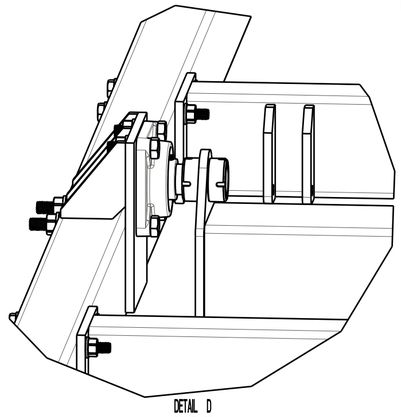
DETAL A
SCALE 3:20



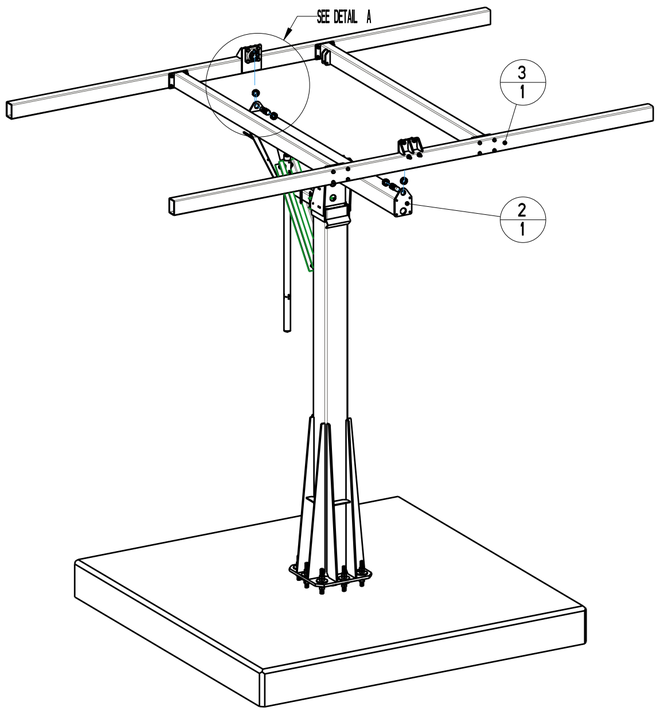
DETAL B
SCALE 1:5

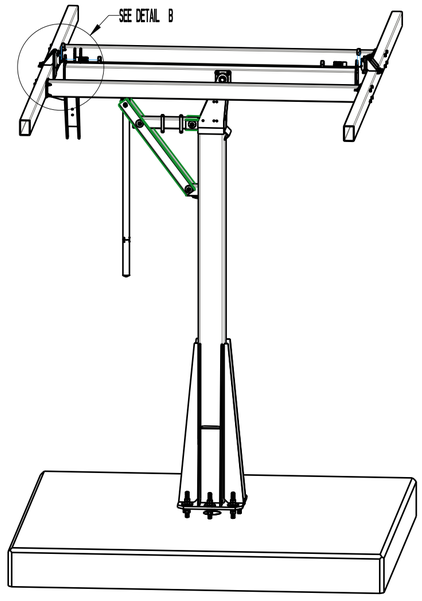


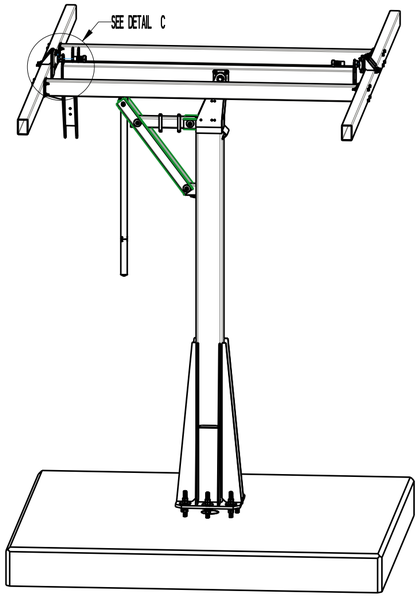
DETAL C
SCALE 1:5

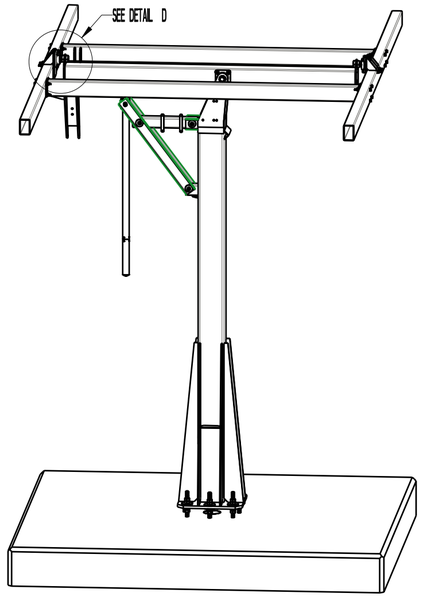


DETAL D
SCALE 1:5









5	4	Nut M38x1.5, rounded w slots									383106397368
4	2	Shaft HAM on shoulder and HPK of SM44MV15P									383106397370
3	1	HPK subconstruction SM44M3V15P									383106397356
2	1	Shoulder construction for SM44M3V15P									383106397348
1	1	Tube hor. w box holder by SM44M3V15P									383106397380
No.	Quantity:	Description:									Date:

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461			Poženik: 21.11.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:			Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	1:100	1856,08 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code 128:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?
SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL TRA SM44M3V15P / ASM SM44M3V15P S008

Latest version: V1

Page: V1

All rights reserved Copyright

Confidentional & Copyright !

Copyright Sat Control d.o.o.

CONFIDENTIONAL !

CONFIDENTIONAL !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA EU www.sat-controls.si / info@sat-controls.si

No. of chan. on chnr.	No. of changes:	Date:	Checked & approved by:

STEP 009

DETAIL A

SCALE 1:10

THE SLIDE CLAMP, THE SCREWS M8 DIN915, WASHER M8 AND NUT M8 DIN934 ARE ATTACHED AND ARE PART OF LINEAR MOTOR SM4S900M3.

SCALE 1:10

SCALE 1:10

SOLAR LINEAR MOTOR SM4S900M3

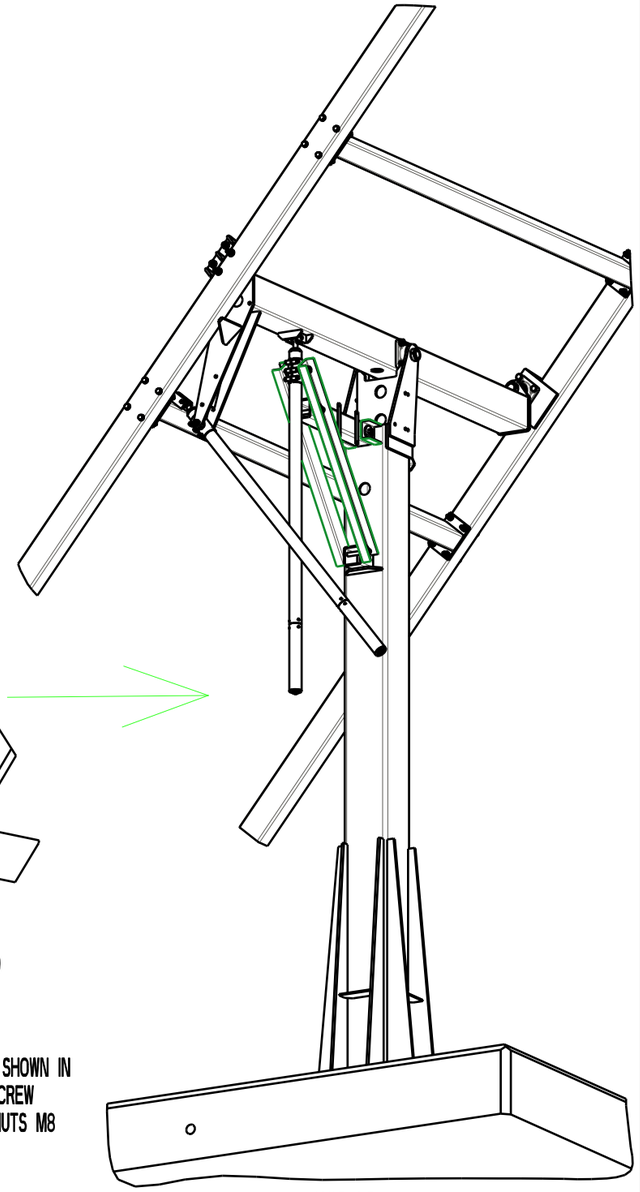
SLIDE CLAMP D57x3,25 FOR SM4M3 V4

SCALE 3:10

36 [38]

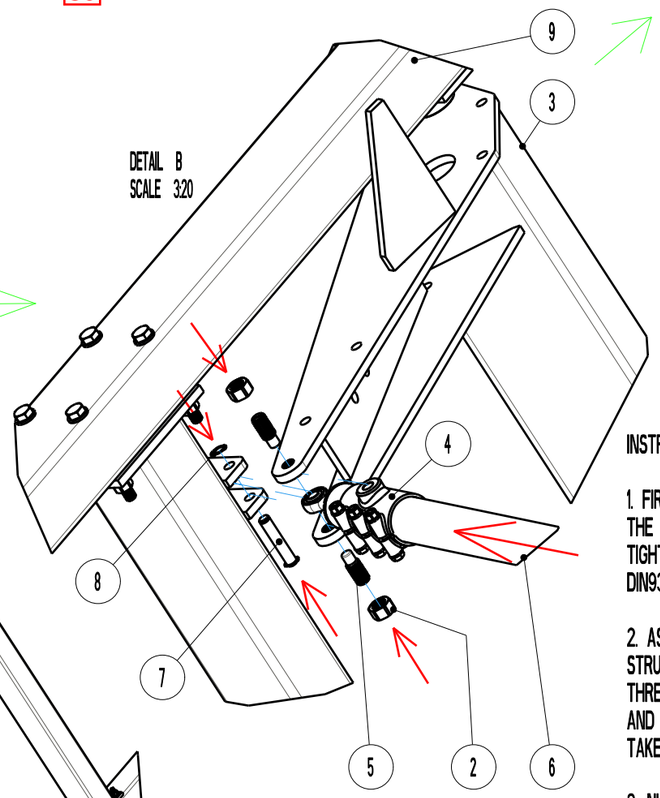
36

DETAIL C
SCALE 3:20

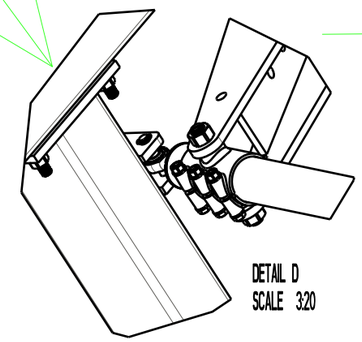


SEE DETAIL B

DETAIL B
SCALE 3:20



DETAIL D
SCALE 3:20



INSTRUCTIONS FOR INSTALATION:

1. FIRST ASSEMBLE THE SLIDE CLAMP ON LINEAR MOTOR SM4S900M3 AS IS SHOWN IN THE EXPLODE STATE AND ASSEMBLED DRAWING VIEW. SEE DETAIL A. THE SCREW TIGHT WITH TORQUE OF 40NM. THE SCREWS M8 DIN912, WASHERS M8 AND NUTS M8 DIN934 ARE ATTACHED AND ARE PART OF LINEAR MOTOR SM4S900M3.

2. ASSEMBLED LIN. MOTOR ITEM 6 and 4, WITH SLIDE CLAMP ITEM 3 THEN ASSEMBLE TO A CONSTRUCTION ASSEMBLED IN STEP 008. LIKE IS SHOWN IN DETAIL A, B AND C. 2 PCS OF PIN W THREAD M16 ITEM 4 WITH A LITTLE GREASE ON YOU NEED TO SCREW INTO A NUT IN FORK ARM AND SLIDE CLAMP ITEM 3. CHECK THAT PIN OF SCREW IS FULLY IN THE HOLE IN SLIDE CLAMP BUT TAKE CARE THAT THE SLIDE CLAMP WITH LIN. MOTOR STILL CAN ROTATE AROUND THE PIN.

3. NUTS M16 ITEM 1 TIGHT ON PIN WITH THREAD M16 ITEM 4 WITH TORQUE OF 50NM ON BOTH SIDES OF FORK ARM.

4. PIN D12X65 ITEM 7 WITH RETAINING RING D12 DIN471C ITEM 8 MOUNTED ON, ASSEMBLE AS IS SHOWN IN DETAIL C AND LOCK IT WITH ANOTHER RETAINGING RING D12 DIN471C ITEM 8

SCALE 1:25

A-Z:	Quantity:	Description:	Code:
9	1	HPK subconstruction SM44M3V15P	3831063973S6
8	4	Retaining ring DIN471C dia: 12	DIN471C-D12
7	2	Pin D12x65 w slots	3831063973S9
6	2	Solar Linear Actuator-Motor SM4S900M3C4 w C4 clamp	3831063900S5
5	4	Pin M16x40 w thread and slot	3831063973T4
4	2	Asm of slide clamp D57x3,25 w screws for SM4M3 V4	3831063973T9
3	1	Shoulder construction for SM44M3V15P	3831063973U8
2	7	Nut M16 DIN934 Fe/Zn 12um	DIN934M16
1	1	Tube hor. w box holder by SM44M3V15P	3831063973V0

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 22111
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	1:20	17.04.2020
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL_TRA.SM44M3V15P.HA-E50.EA-90 / ASM.SM44M3V15P.S009

Latest version: V1

All rights reserved Copyright!

CONFIDENTIONAL !

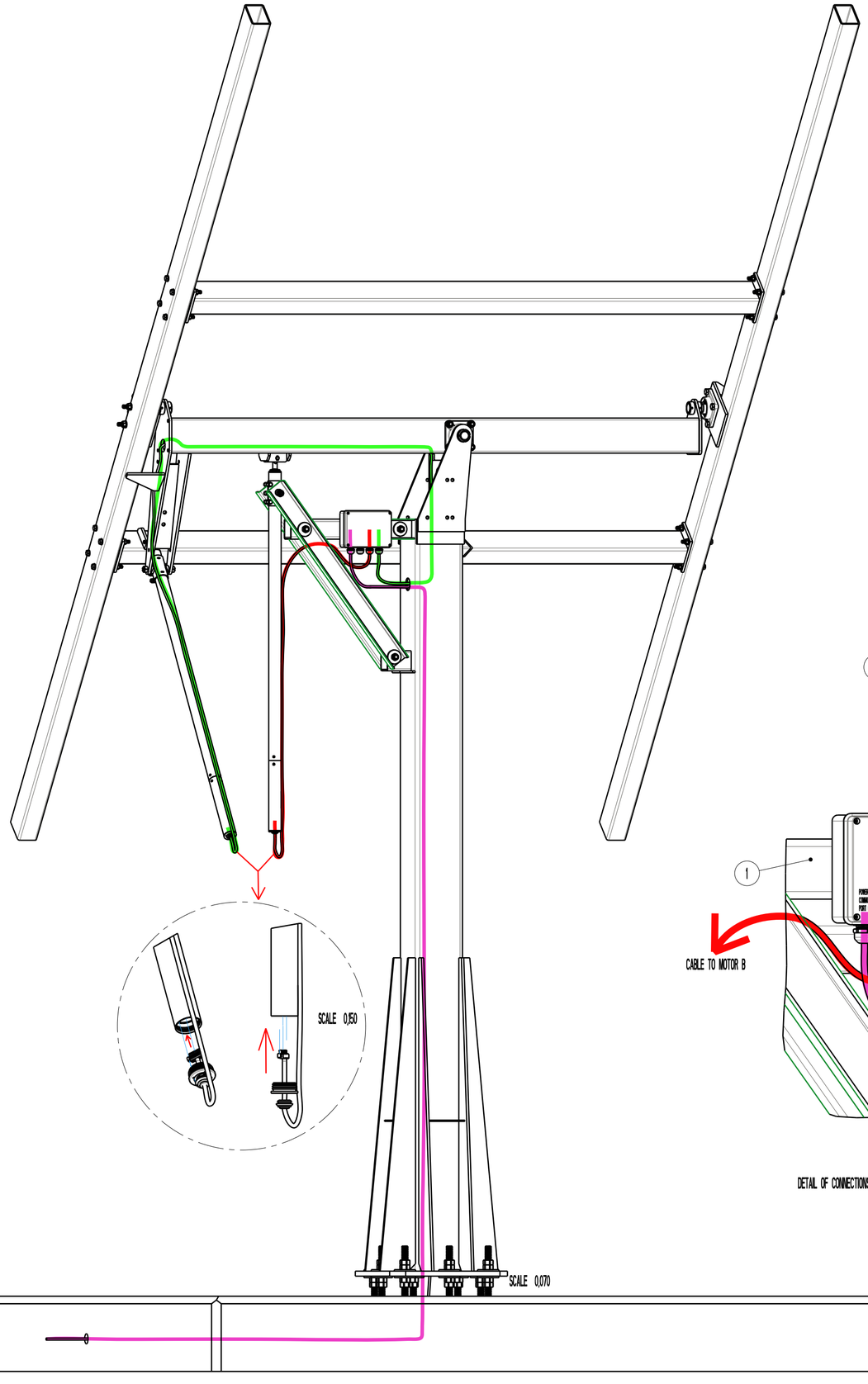
CONFIDENTIONAL !

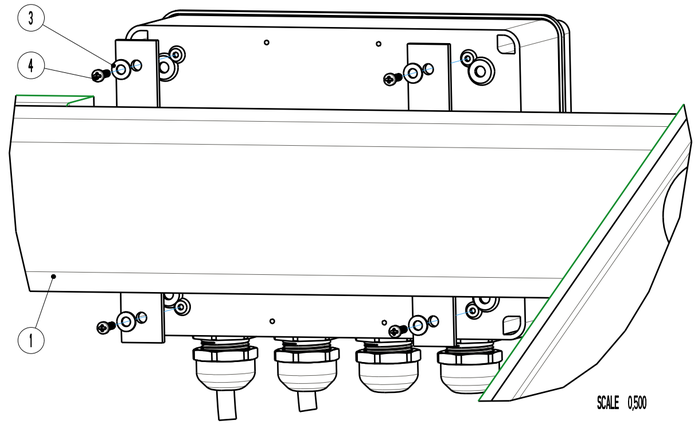
CONFIDENTIONAL !

Confidentional & Copyright !

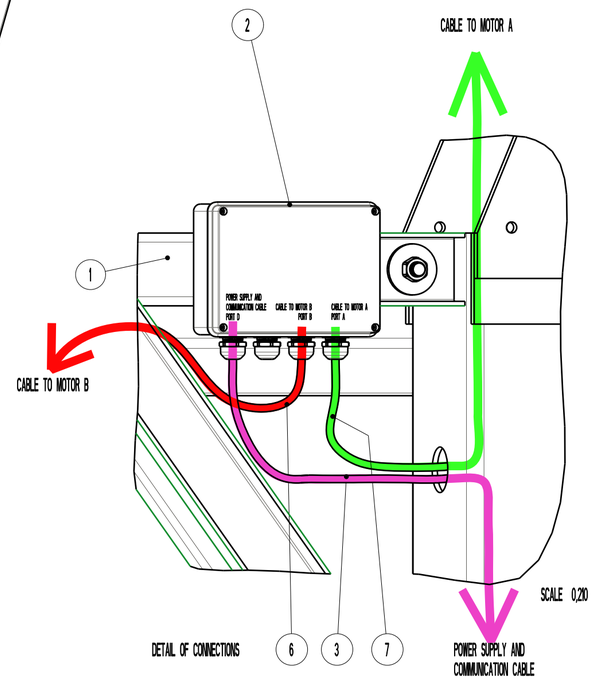
STEP 010

No. of class. on drw:	No. of changes:	Date:	Checked & approved by:





4x



INSTRUCTIONS FOR INSTALATION:

1. FIRST ASSEMBLE THE JUNCTION BOX SET WITH INSTALED SOLAR POSITIONER AND 2 PCS OF CABLES FOR LINEAR MOTORS ITEM 1 AS IS SHOWN IN THE EXPLODE STATE OF DETAIL A THE SCREW TIGHT VERY GENTLY, ONLY SO MUCH THAT THE BOX STAY ON.

2. LATER ON YOU NEED TO INSTALL THE CABLES ATTACHED TO JUNCTION BOX SET ON THE CONSTRUCTION AND CONNECT TO THE LINEAR MOTORS.
FIRST INSTALL THROW THE CONSTRUCTION THE LONG 5M CABLE WHICH IS HOUR ANGLE MOTOR (HAM) CABLE ITEM 5 WHICH IS INSTALLED IN PORT A AND CONNECT WITH MOTOR A (HAM), AS IS SHOWN IN DRAWING.
WHERE TO INSTALL CABLE FOR HAM IS MARK WITH GREEN SPLINE. CONNECT THE CABLES WITH THE INOX CABLE TIES. THE END CONNECTOR YOU NEED TO PLUG INTO SOCKET AND SCREW THE ATTACHED SCREWS ON THE CONNECTOR TO SOCKET. TIGHT VERY GENTLY ONLY THAT THE CABLE CANT BE DISCONNECTED. THEN PUSH THE ENCLOSURE OF THE MOTOR WITH GLAND INTO MOTOR TO CLOSE OPEN SPACE, SO THAT THE WATER CANNOT COME IN.

3. SECOND INSTALL BELOW THE CONSTRUCTION THE SHORT 2M CABLE WHICH IS ELEVATION ANGLE MOTOR (EAM) CABLE ITEM 6 WHICH IS INSTALLED IN PORT B AND CONNECT WITH MOTOR B (EAM), AS IS SHOWN IN DRAWING.
WHERE TO INSTALL CABLE FOR EAM IS MARK WITH RED SPLINE. CONNECT THE CABLES WITH THE INOX CABLE TIES. THE END CONNECTOR YOU NEED TO PLUG INTO SOCKET AND SCREW THE ATTACHED SCREWS ON THE CONNECTOR TO SOCKET. TIGHT VERY GENTLY ONLY THAT THE CABLE CANT BE DISCONNECTED. THEN PUSH THE ENCLOSURE OF THE MOTOR WITH GLAND INTO MOTOR TO CLOSE OPEN SPACE, SO THAT THE WATER CANNOT COME IN.

3. THIRD YOU NEED TO HAVE 5M LONG CABLE AND INSTALL THROW THE POLE AND CONCRETE BLOCK, AS IS SHOWN IN DRAWING.
WHERE TO INSTALL CABLE IS MARK WITH PINK SPLINE. THEN YOU NEED TO OPEN JUNCTION BOX AND CONNECT THE POWER SUPPLY AND COMM.CABLE WITH CONNECTION PANEL IN JUNCTION BOX SET IN PORT D. PLEASE NOTE: POWER SUPPLY AND COMM. CABLE IS NOT A PART OF TRACKER!

WHERE TO CONNECT THE CABLE IN THE JUNCTION BOX SET IS WRITEN IN THE BOX. THE DRAWING IS IS ADDED TO BOX.

4. SWITCH ON POWER SUPPLY 24V DC 5A AND WITH HELP OF BUTTONS MOVE BOTH MOTORS TOTALY IN (TOGETHER), SO THAT THE END SWITCH STOPS THE MOVEMENT.

5. CONNECT THE PERSONAL COMPUTER WITH THE USB CABLE TO USB PORT ON SOLAR POSITIONER MODEL "MICRO". HOW TO ESTABLISH THE CONNECTION WITH HELIOS ANALYTICS IS WRITTEN IN MANUAL FOR SOLAR POSITIONER. ONCE THE CONNECTION IS ESTABLISHED AND YOU CAN SEE THE PARAMETERS DISABLE AUTOMATIC TRACKING AND MAKE THE REFERENCE POSITION FOR BOTH MOTORS.

6. ONCE ALL SYNCHRONISATION IS DONE, START THE HORIZONTAL ALIGNMENT FOR BOTH AXES THEN DISCONNECT THE COMPUTER AND SWITCH OF POWER SUPPLY.

7	1	Int. Cable SM4M3 w con. 7pins-OPEN, L:5m 2x15x0.22	3831063960067
6	1	Int. Cable SM4M3 w con. 7pins-OPEN, L:2m 2x15x0.22	3831063960049
5	4	Screw DP3x13 WM4/2 duroplast Fe/Zn 12um	VIJDP3X13A3G
4	4	Washer DIN125A M4	DIN125A-M4
3	1	Cable 2x2.5mm2/2x0.22 twisted pair, UV prot, outdoor, 0,6/1 KV	KABNAP2DX2T
2	1	Set Jun. Box 190x140x70 w inst. sol. poz., DIN rail, glands, cable	3831063913O4
1	1	Tube hor. w box holder by SM44MC1V15P	3831063973B0
A2	Quantity:	Description:	Code:

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461			Priznik: 2218
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:			Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	0,050	27MAL202 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code +2:	No. of drawing:	Scale:	Mass:

SAT CONTROL d.o.o. Prezenk 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-tractors.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL.TRA.SM44MC1V15P.HA-ESD.EA-90 / ASM.SM44MC1V15P.S010

Latest version: V1

Page: V1

All rights reserved Copyright

Confidentional & Copyright !

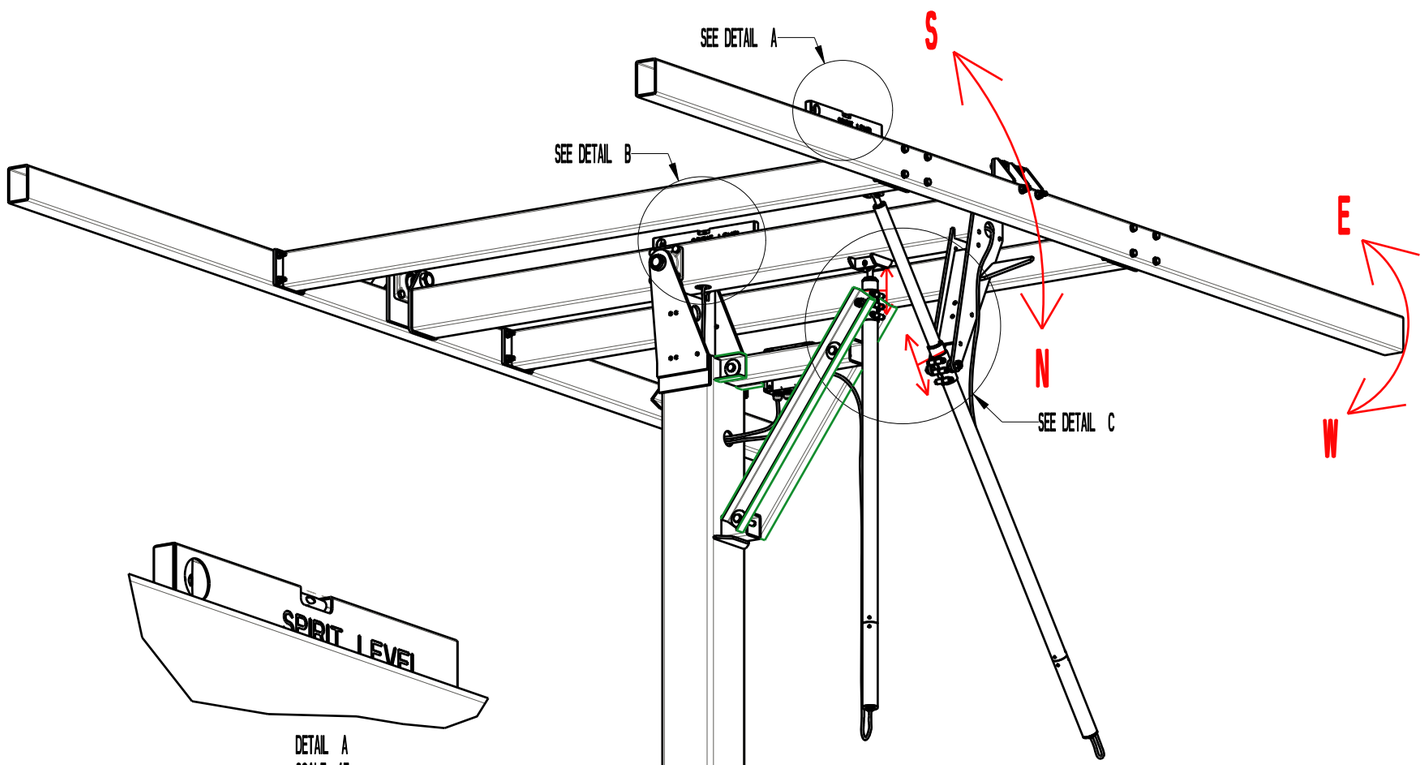
Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional !

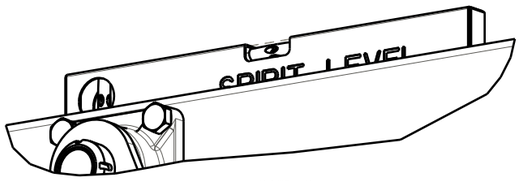
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of chan. on chnr.	No. of changes:	Date:	Checked & approved by:

STEP 010.B



DETAIL A
SCALE 1:5



DETAIL B
SCALE 1:5

SCALE 1:20

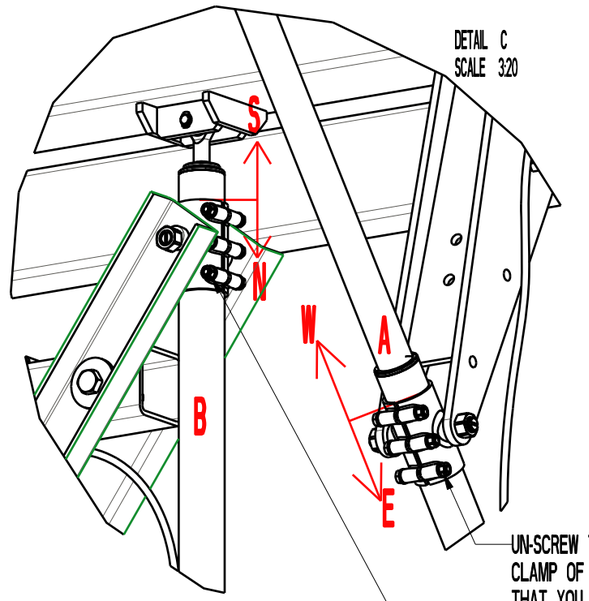
INSTRUCTIONS FOR INSTALATION:

1. IN PREVIOUS STEP YOU DID TURNING BOTH AXES TO HORIZONTAL POSITION FOR H/V ALIGNMENT WITH HELP OF HELIOS ANALYTICS, SO YOU RAN THE H/V ALIGNMENT SEQUENCE.

2. ON HORIZONTAL POSITIONED HPK CONSTRUCTION THAT YOU TURNED WITH PROGRAM YOU NEED TO PUT SPIRIT LEVEL FOR FINE BALANCE OF HORIZONTALITY IN BOTH DIRECTIONS; NORD-SOUTH AND EAST-WEST. LIKE SHOWN IN DETAIL A.

3. UN-SCREW THE SCREWS AND NUTS ON THE SLIDE CLAMP OF A-LINEAR MOTOR JUST A LITTLE SO THAT YOU CAN MOVE LINEAR MOTOR WITH HPK CONSTRUCTION SLIGHTLY UP AND DOWN AND IN THIS WAY ROTATE IT IN EAST-WEST DIRECTION. IN THE SAME TIME TAKE A LOOK THE SPIRIT LEVEL AND WHEN IS EAST-WEST DIRECTION FULLY IS HORIZONTAL TIGHT THE SCREWS BACK LIKE IT WAS. THE TIGHTENING TORQUE IS 40NM. THIS IS PRECISION WORK. SEE DETAIL C

4. UN-SCREW THE SCREWS AND NUTS ON THE SLIDE CLAMP OF A-LINEAR MOTOR JUST A LITTLE SO THAT YOU CAN MOVE LINEAR MOTOR WITH HPK CONSTRUCTION SLIGHTLY UP AND DOWN AND IN THIS WAY ROTATE IT IN EAST-WEST DIRECTION. IN THE SAME TIME TAKE A LOOK THE SPIRIT LEVEL AND WHEN IS EAST-WEST DIRECTION FULLY IS HORIZONTAL TIGHT THE SCREWS BACK LIKE IT WAS. THE TIGHTENING TORQUE IS 40NM. THIS IS PRECISION WORK. SEE DETAIL C



DETAIL C
SCALE 3:20

UN-SCREW THE SCREWS AND NUTS ON THE SLIDE CLAMP OF B-LINEAR MOTOR JUST A LITTLE SO THAT YOU CAN MOVE LINEAR MOTOR WITH HPK CONSTRUCTION SLIGHTLY UP AND DOWN AND IN THIS WAY ROTATE IT IN NORD-SOUTH DIRECTION. IN THE SAME TIME TAKE A LOOK THE SPIRIT LEVEL AND WHEN IS NORD-SOUTH DIRECTION FULLY IS HORIZONTAL TIGHT THE SCREWS BACK LIKE IT WAS. THE TIGHTENING TORQUE IS 40NM. THIS IS PRECISION WORK.

UN-SCREW THE SCREWS AND NUTS ON THE SLIDE CLAMP OF A-LINEAR MOTOR JUST A LITTLE SO THAT YOU CAN MOVE LINEAR MOTOR WITH HPK CONSTRUCTION SLIGHTLY UP AND DOWN AND IN THIS WAY ROTATE IT IN EAST-WEST DIRECTION. IN THE SAME TIME TAKE A LOOK THE SPIRIT LEVEL AND WHEN IS EAST-WEST DIRECTION FULLY IS HORIZONTAL TIGHT THE SCREWS BACK LIKE IT WAS. THE TIGHTENING TORQUE IS 40NM. THIS IS PRECISION WORK.

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Pozenik: 23.11.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J. / Bolka B.	383106390153		SM44M3V15P	0153-A	1:20	186545,106 g
Drawed by:		Checked by: / Approved by:	EAN code / standard:		Code 2:	No. of drawing:	Scale:	Mass:

SAT CONTROL "Wired to the Connect"

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL_TRA.SM44M3V15P / ASM.SM44M3V15P.S010.B

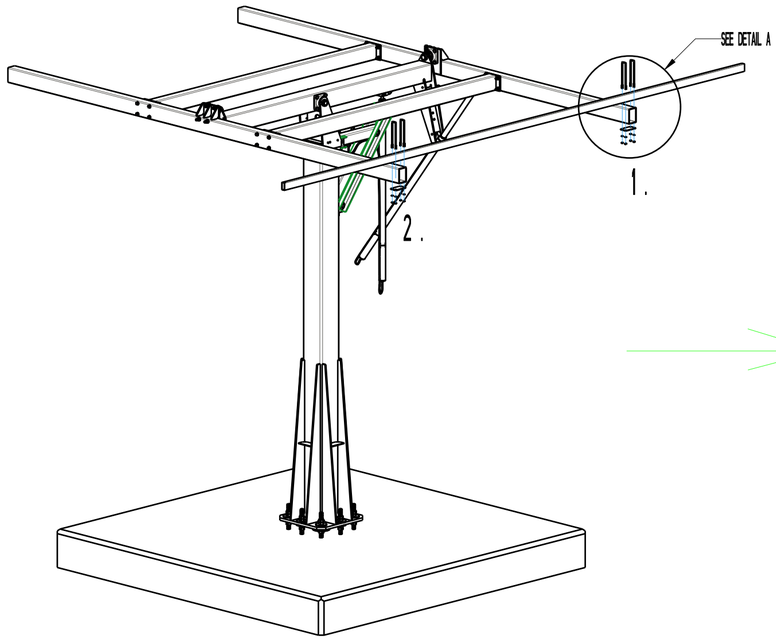
Latest version: V1

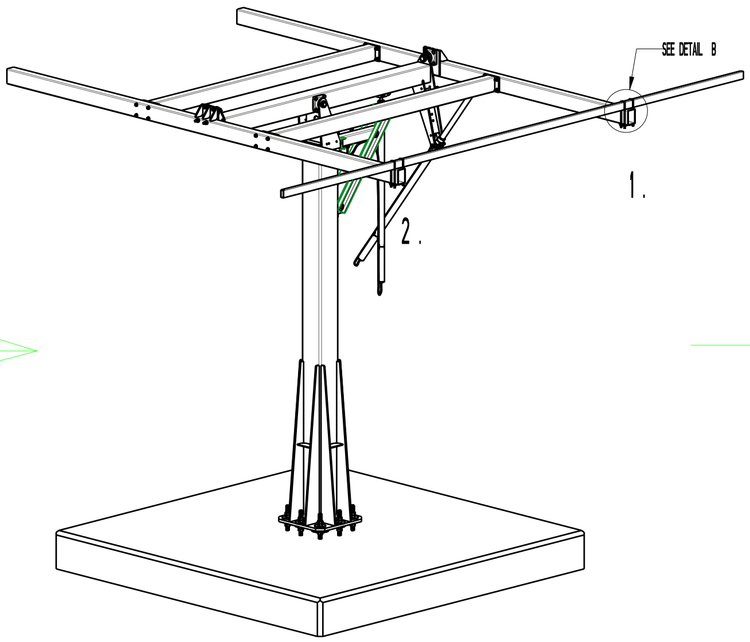
Page: 1/1

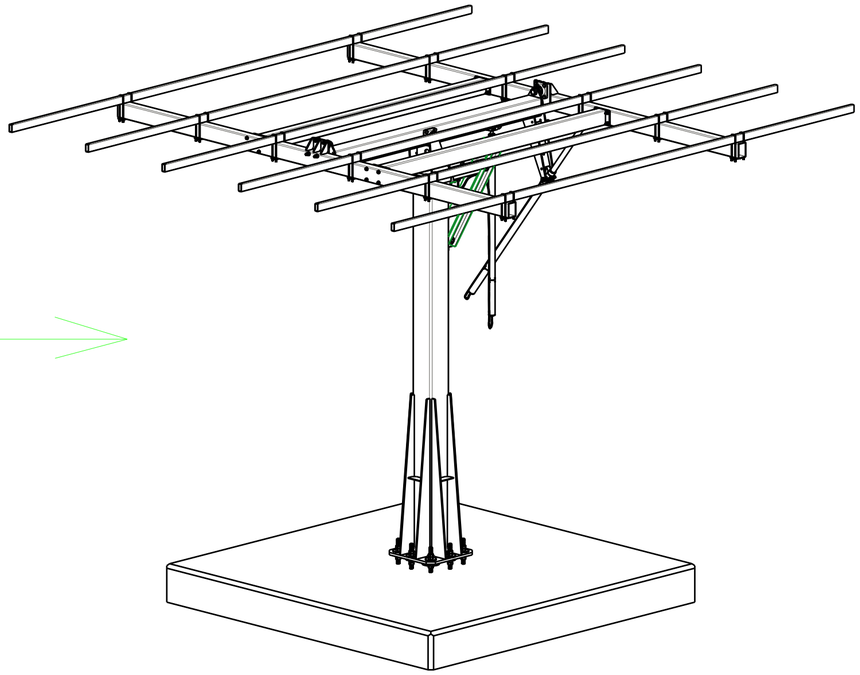
Copyright Sat Control d.o.o. -------- Confidentional !

Confidentional & Copyright !

STEP 01





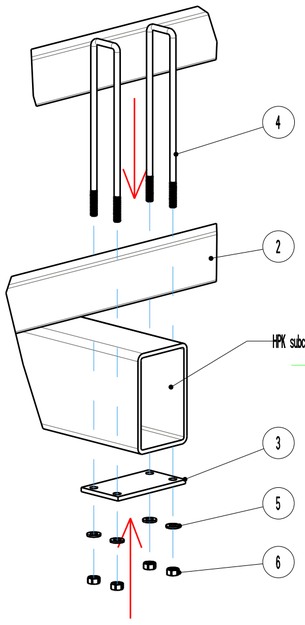


No. of class. on drw:	No. of changes:	Date:	Checked & approved by:

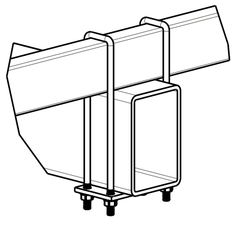
INSTRUCTIONS FOR INSTALATION:

1. ON HORIZONTALY POSITIONED HPK SUBCONSTRUCTION YOU NEED TO MOUNT THE 6 PIECES OF TUBES 60X30X2 L-5M. FIX IT WITH THE FITING MATERIAL AS IS SHOWN IN DETAL A ON BOTH SIDES OF HPK SUBCONSTR. LAYOUT AND POSITIONS ARE SHOWN IN DETAL C AND DETAIL D.

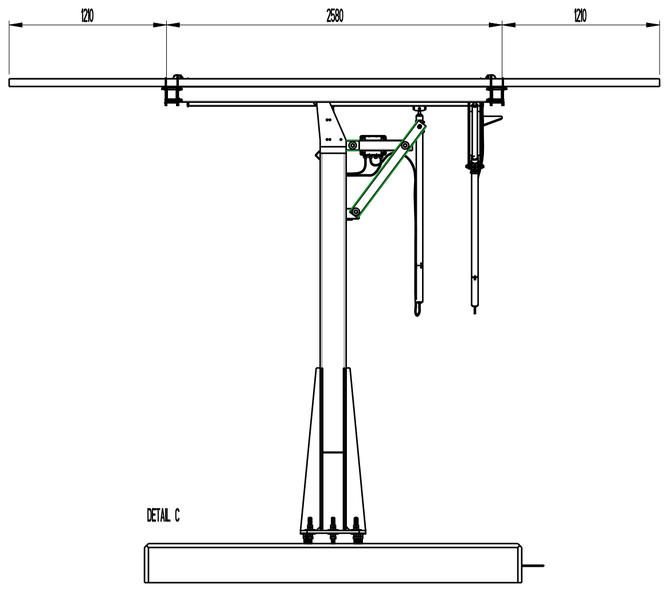
NUTS M8 SCREW WITH TORQUE OF 10-15NM.

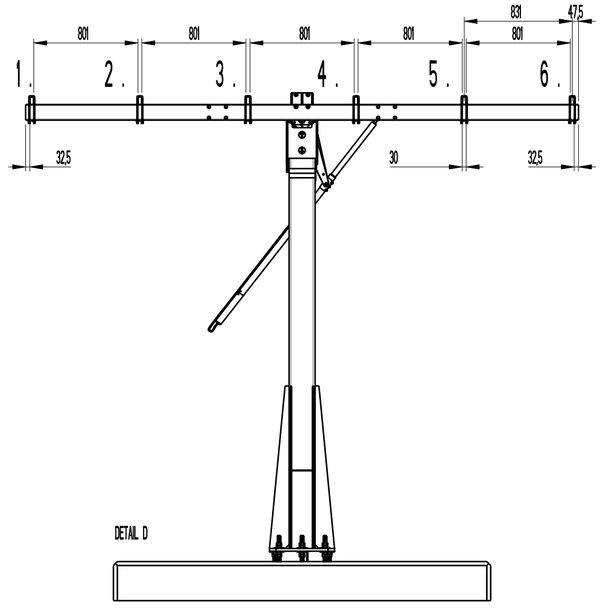


DETAIL A
SCALE 15



DETAIL B
SCALE 15





6	48	Nut M8 DIN934 Fe/Zb Din	DIN934M8
5	48	Washer DIN125A M8	DIN125AM8
4	24	Hoging V-screw M8-39-22C galvanized	ISO.HLM8-39-22C
3	12	Fixation plate on tube 60x30 at HPK by SM44M3V15P	LXEPL07272
2	6	Tube rectangular 60x30x2 L-5m hot galv	CEPPA1270
1	1	Tube lin. w box holder by SM44M3V15P	CX2RDSM44M3V15P
A-Z	Quantity:	Description:	Code:

0153	1	Sestav / Assembly	25m2	IN7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461			Poženik: 24.10.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:			Place & Date:
Bolka B.	Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	0:1		18545.026 g
Drawed by:	Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:		Mass:

SAT CONTROL

SAT CONTROL d.o.o. Poženik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-trackers.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL.TRA.SM44M3V15P / ASM.SM44M3V15P.SOLI1

Latest version: V7

Page: V7

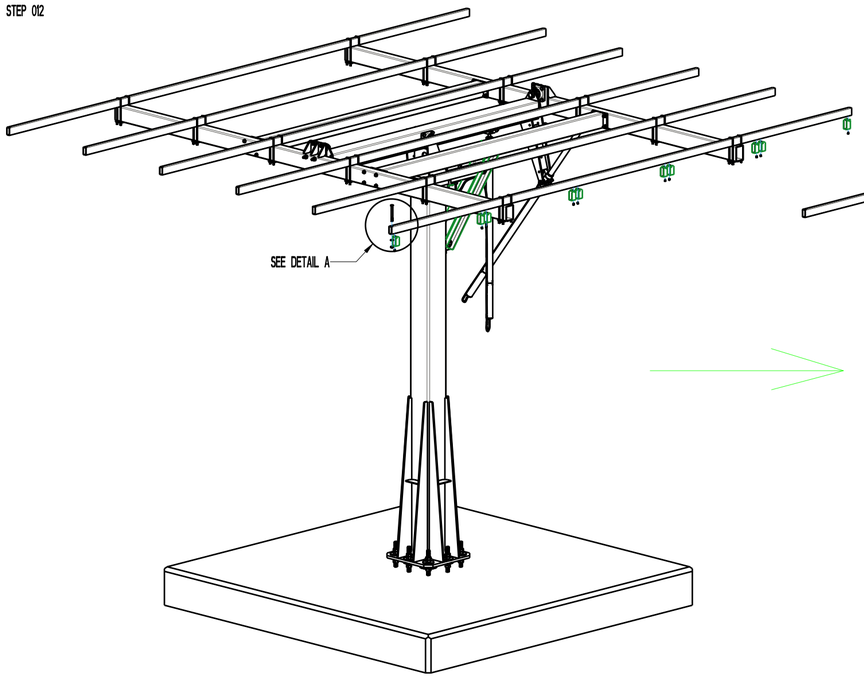
All rights reserved Copyright

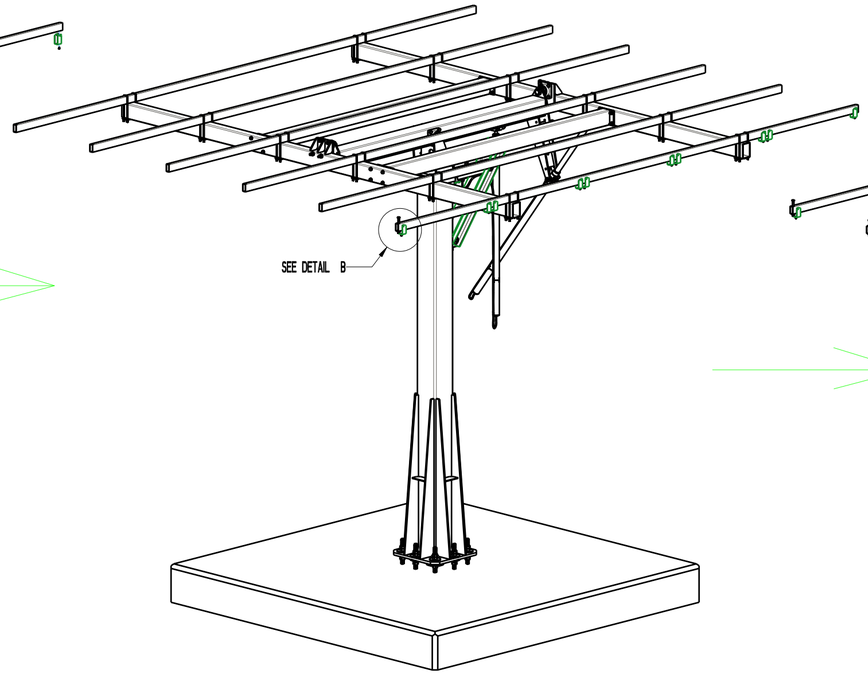
Confidentional & Copyright !

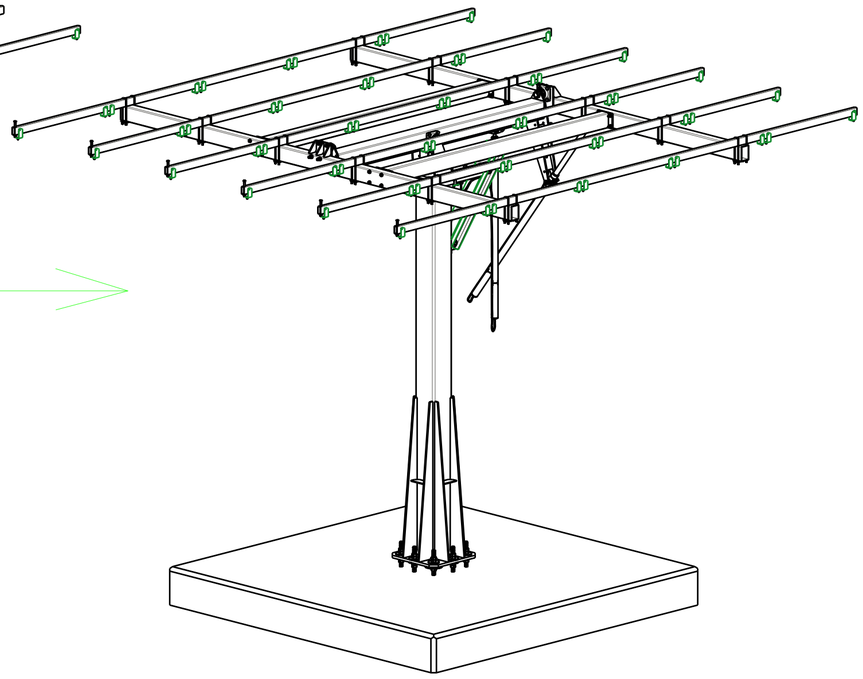
Confidentional & Copyright !

STEP 012

No. of chan. on drw.	No. of changes:	Date:	Checked & approved by:





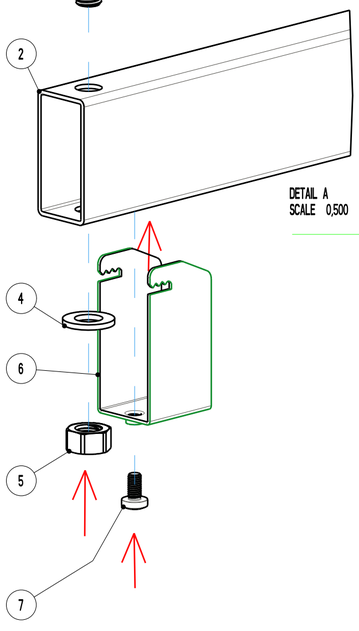


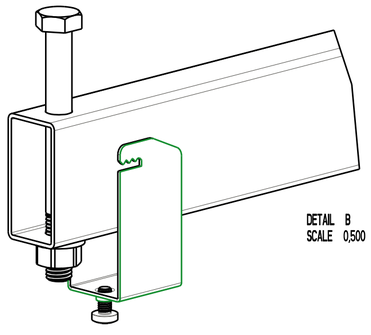
INSTRUCTIONS FOR INSTALATION:

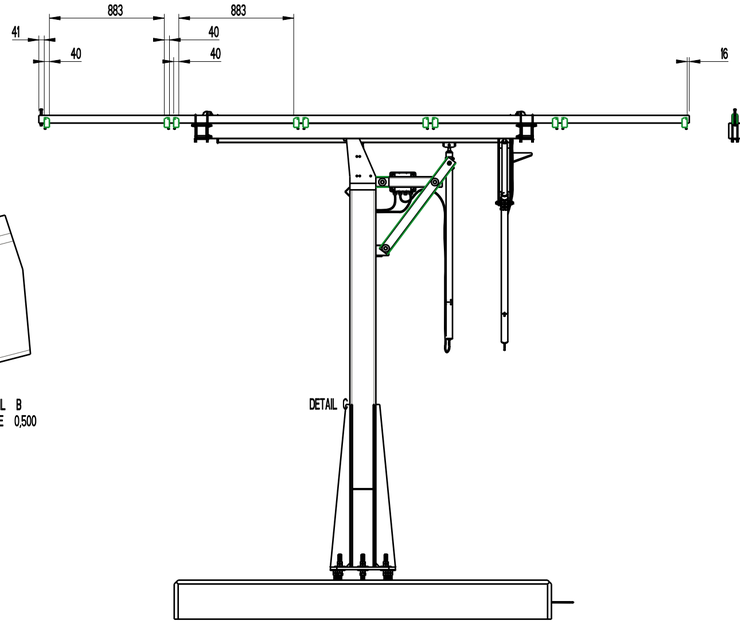
1. ON TUBES 60x30x2 L:5M MOUNT THE SCREW M12X120 WITH WASHER M12 AND NUT M12 AS IS SHOWN IN DETAIL A AND DETAIL B.

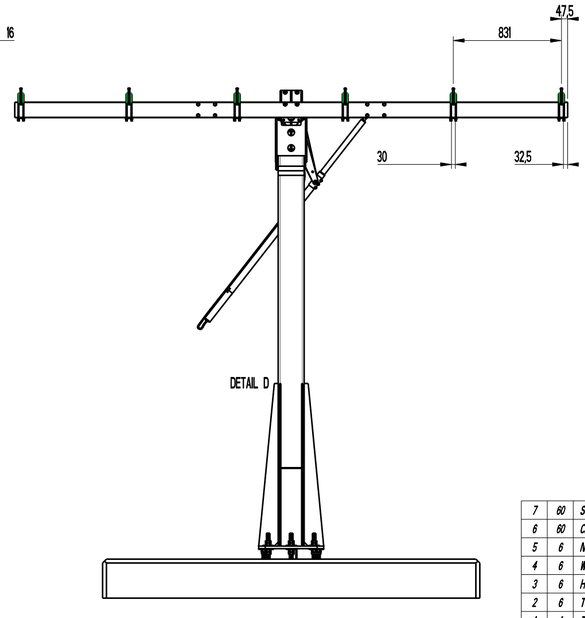
2. MOUNT THE SOLAR TOTHED CLAMP WITH SCREW M6X12 ON POSITIONS AS IS WRITEN. DO NOT PUSH TOTALLY UP THAT YOU WILL LATER CAN MOUNT SOLAR PANELS ON.

NUTS M8 SCREW WITH TORQUE OF 3-6NM DEPEND FROM TYPE OF SOL. PANEL AND MATERIAL.









7	60	Screw M6x12/ DIN7985 LGK	DIN7985M6X12
6	60	Clamp - Solar toothed V12 INOX 76,5x34,5x40	OBJZZSV12
5	6	Nut M12 DIN934 Fe/Zn 12um	DIN934M12
4	6	Washer DIN125A M12	DIN125A-M12
3	6	Hexagon screw DIN931 M12X120	DIN931M12X120
2	6	Tube rectangular 60x30x2 L:5m hot galv	CEVPRA7371
1	1	Tube hor. w box holder by SM44M3V15P	CHZNSSM44M3V15P
A-Z	Quantity:	Description:	Code:

0153	1	Sestav / Assembly	25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Poznik: 24.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J. / Bolka B.	3831063901S3		SM44M3V15P	0153-A	0,030	185415,036 g
Drawed by:		Checked by: / Approved by:	EAN code / standard:		Code 128:	No. of drawing:	Scale:	Mass:

SAT CONTROL

Want to see more?

SAT CONTROL d.o.o. Poznik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL TRA SM44M3V15P / ASM SM44M3V15P S012

Latest version: V1

Page: V1
All rights reserved Copyright

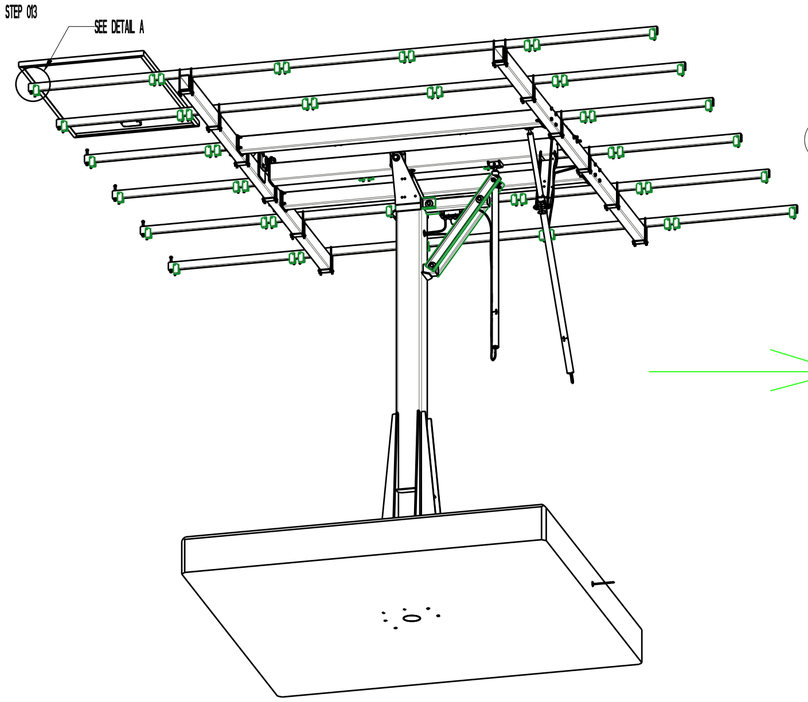
Confidentional & Copyright !

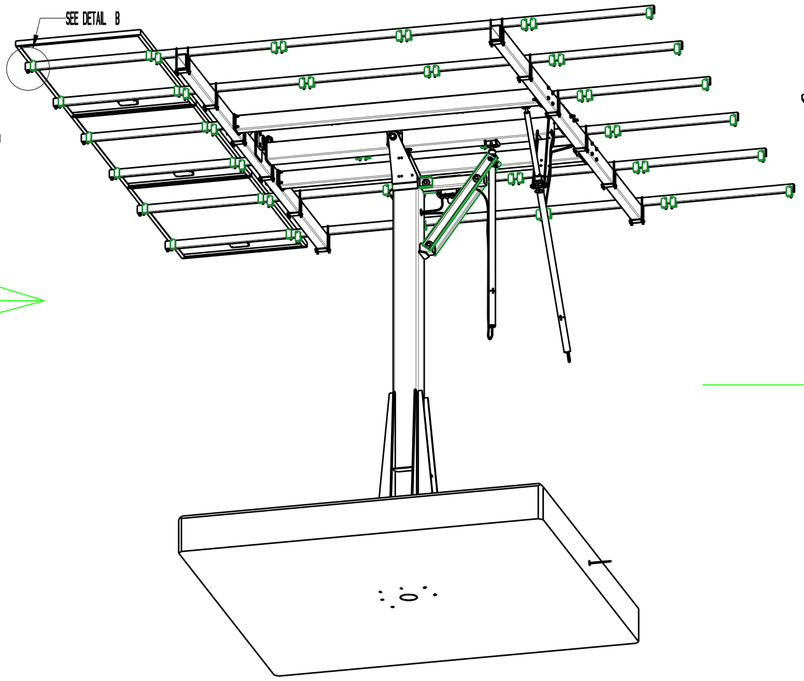
Confidentional & Copyright !

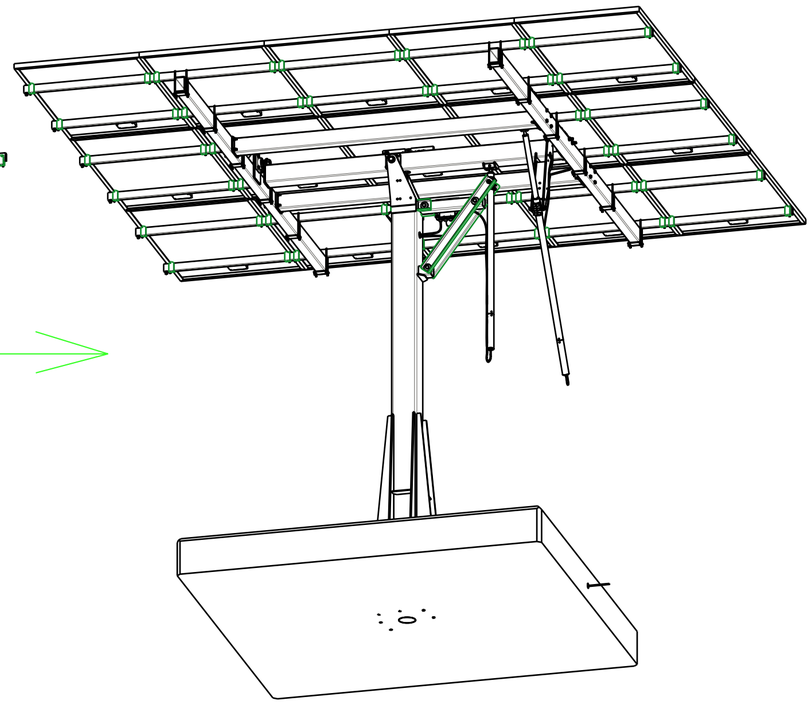
Confidentional & Copyright !

No. of sheet on drw:	No. of changes:	Date:	Checked & approved by:

STEP 013







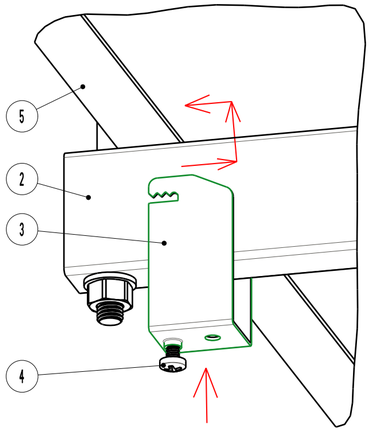
INSTRUCTIONS FOR INSTALATION:

1. ON TUBES 60x30x2 L:5M MOUNT SOLAR PANEL 250WP WITH DIM 1650 X 995 X 50 AS IS SHOWN.

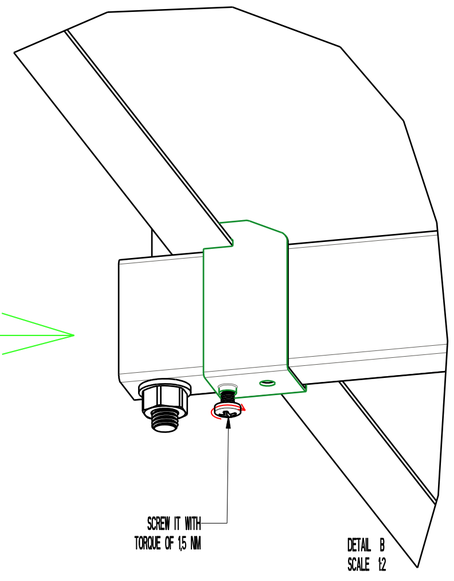
2.CHECK THE POSITION FOR MOUNTING THE PANEL AND PANEL ARRAY, SEE DETAIL C AND DETAIL D.

3. GRAB SOLAR PANEL WITH THE SOLAR TOOTHERD CLAMP AND FIX IF WITH SCREW M6 AS IS SHOWN IN DETAIL A AND IN DETAIL B, 4 TIMES FOR ONE PANEL AT EACH CROSS POINT. TIGHT WITH TORQUE OF 1,5 NM MIN.

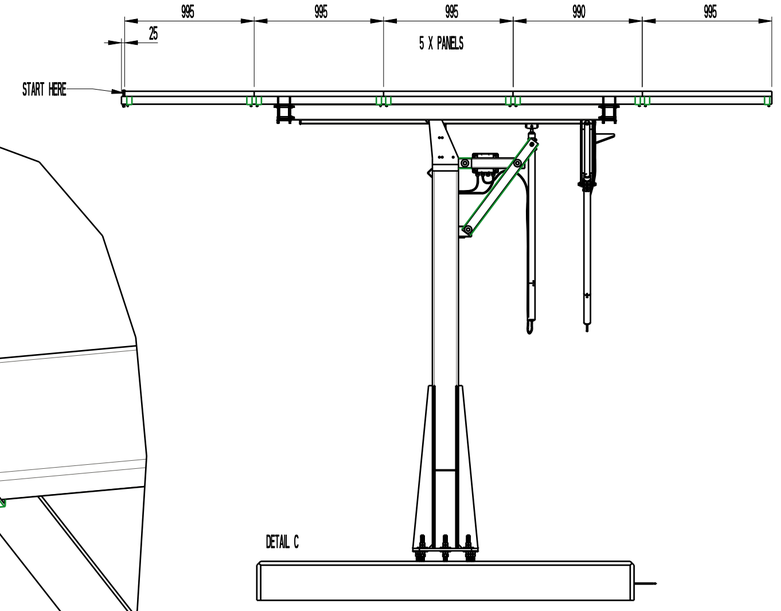
3. REPEAT THIS 15 TIMES FOR 15 SOLAR PANELS.



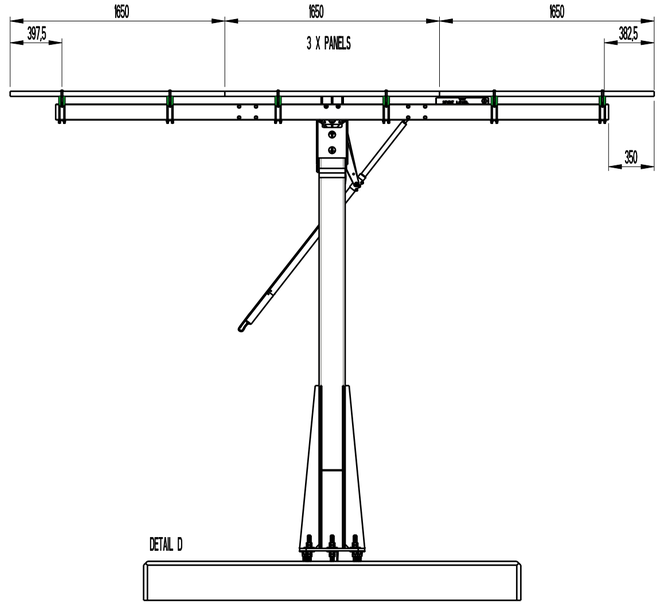
DETAIL A
SCALE 1:2



DETAIL B
SCALE 1:2



DETAIL C



DETAIL D

5	15	PV panel 250Wp dim 1650x995x45 mm	SPVP250W	
4	60	Screw M6x12/ DIN7985 LGK	DIN7985M6X12	
3	60	Clamp - Solar toothed V12 INOX 76,5x34,5x40	OBJZZSV12	
2	6	Tube rectangular 60x30x2 L:5m hot galv	CEVPRA7371	
1	1	Tube hor. w box holder by SM44M3V15P	CHZNSSM44M3V15P	
A2	Quantity	Description	Code	

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Poženik: 25.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831106390153		SM44M3V15P	0153-A	3:100	1856,06 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL "Want to see more?"

SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels / 25m2 /

File: SOL TRA SM44M3V15P / ASM SM44M3V15P 3013

Latest version: V1

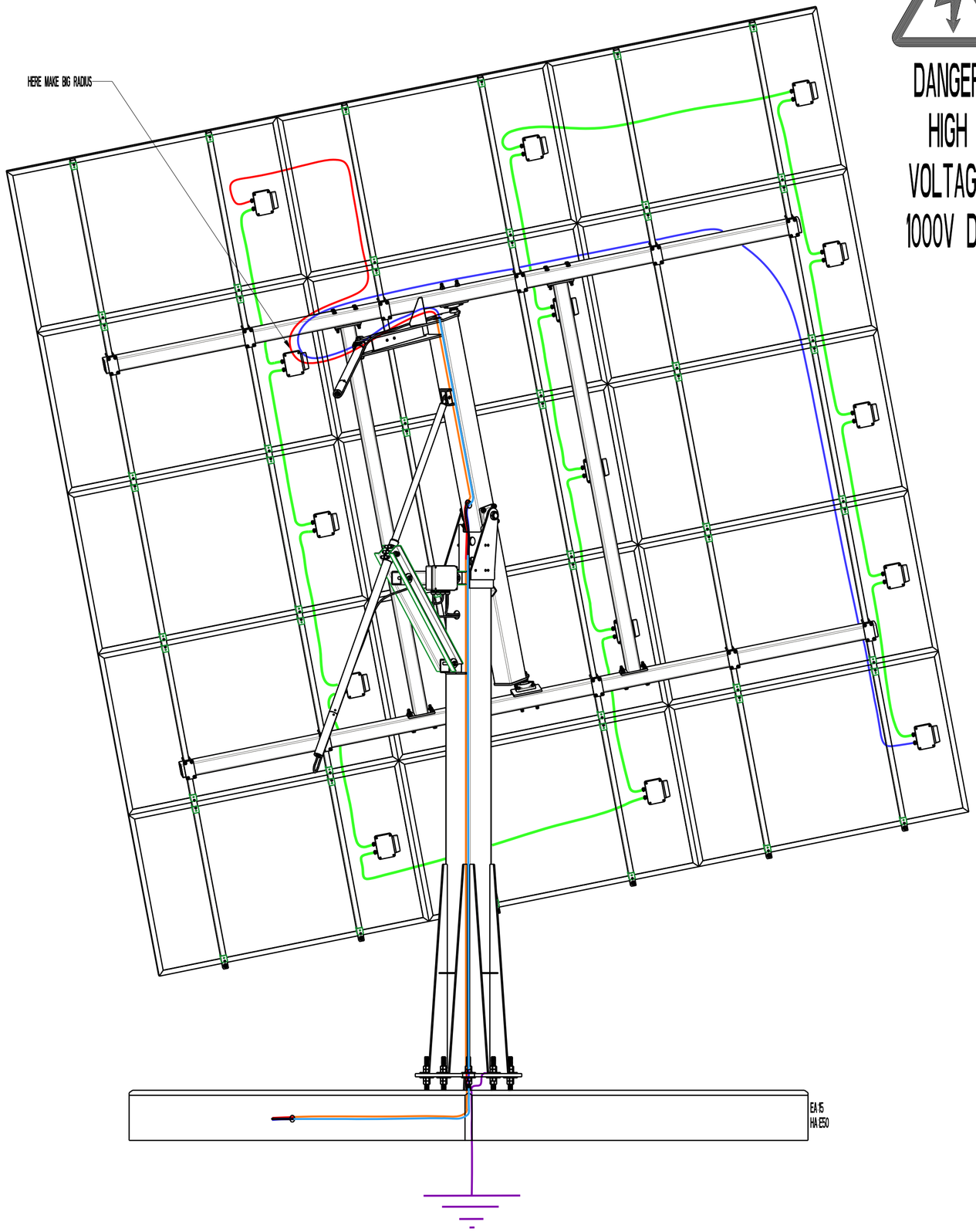
Page: V1

All rights reserved Copyright

Confidentional & Copyright !

Confidentional & Copyright !

STEP 014



DANGER
HIGH
VOLTAGE
1000V DC

No. of class. on drw:	No. of changes:	Date:	Checked & approved by:

INSTRUCTIONS FOR INSTALATION:

BEFORE START READ SECURITY PRECAUTIONS, READ YOUR LOCAL STANDARDS AND LAWS FOR SECURITY PRECAUTIONS AGAIN ELECTRICAL SHOCKS AND INJURIES AND RESPECT THEM ELSE CAN HAPENED MATERIAL DAMAGE, ELECTRICAL SHOCK, INJURY OR EVEN DEATH !!!

IMPORTANT NOTE: WHEN YOU CONNECT THE PANELS IN SERIES YOU GET HIGH VOLTAGE POWER CAN KILL YOU !!!

THE SOLAR TRACKER MUST BE STILL IN HORIZONTAL POSITION FROM LAST STEP, THEN

1. THE PLUS POLE (RED AND ORANGE IN DRAWING) OF FIRST SOLAR PANEL IN THE STRING WIRE BELOW PANELS, THROW THE SHOULDER AND POLE CONTRUCTION DOWN, THROW THE CONCRETE BLOCK AND OUT WHICH YOU WILL CONNECT TO OTHER STRINGS OR INVERTER 3-PHASE. MAKE SURE THAT YOU WILL MAKE BIG RADIUS WITH CABLE BEFORE YOU ENTER IN SHOULDER AND POLE CONSTRUCTION WITH IT. FOR THE FIXATION OF THE CABLE USE INOX CABLE TIES.

2. THE MINUS POLE (BLUE AND LIGHT BLUE IN DRAWING) OF LAST SOLAR PANEL (15TH) IN THE STRING WIRE BELOW PANELS, THROW THE SHOULDER AND POLE CONTRUCTION DOWN, THROW THE CONCRETE BLOCK AND OUT WHICH YOU WILL CONNECT TO OTHER STRINGS OR INVERTER 3-PHASE. MAKE SURE THAT YOU WILL MAKE BIG RADIUS WITH CABLE BEFORE YOU ENTER IN SHOULDER AND POLE CONSTRUCTION WITH IT. FOR THE FIXATION OF THE CABLE USE INOX CABLE TIES.

3. CONNECT THE STRING CABLE (PLUS AND MINUS POLE IN TO INVERTER 3-PHASE. MAKE SURE THAT THE SOLAR PANELS SITLL DIDN'T CONNECTED TOGETHER, SEE THE GREEN LINES MUST NOT BE CONNECTED YET, OTHERTWISE THE POWER IN WIRE FROM THE SOLAR PANELS WILL KILL YOU !!! HOW TO CONNECT AND HOW TO WIRE THE INVERTER AND CONNECT IN TO POWER NETWORK READ IN INSTRUCTIONS MANUAL FOR INVERTER AND FROM PROJECT DOCUMENTATION WHICH YOU NEED TO HAVE IT BEFORE YOU BUILD TRACKER. THE PERSON WHO DO THE ELECTRICAL WIRING MUST BE QUALIFIED ELECTRICIAN - INGINEER WITH LICENCE !!!

4. MAKE THE APPROPRIATE GROUNDING ACCORDING YOUR LOCAL LAWS AND STANDARDS FOR CASE OF LIGHTNING STRIKE OR IN CASE OF COINCIDENTLY BREAKAGE OF SOME CABLE THIS WAY COME THE SHORT-CUT OF POWER TO CONSTRUCTION. IF YOU DO NOT DO QUALITY GROUNDING CAN CONSEQUENCE THE DEATH OR BIG MATERIAL DAMAGE. LIGHTNING STRIKE OR SOME OTHER SHORT CIRCUITED POWER ON METAL CONSTRUCTION CAN BE CARIED OUT TO OTHER TRACKERS AND THERE IT WILL MAKE DAMAGE TOO. SEE AT THE DRAWING IS MARK WITH PINK COLOR.

5. ONCE ALL CONNECTED AND TESTED WITH TEST MEASUREMENTS YOU CAN CONNECT ALL PANELS WITH SOLAR CABLE WHICH IS NORMALY ATTACHED TO THE PANEL IN SERIES. THIS IS CALED "STRING", SO YOU CONNECT THE + POLE FROM 1ST PANEL TO - POLE OF PANEL 2 AND YOU ARE CONTINUE TILL LAST ONE (THE 15TH). WHEN CONNECT LAST ONE AND IF OUTSIDE THE SUN IS SHINING, THE INVETER WILL START TO WORK.

NOTE: THE CABLES ARE DRAWED IN DIFERENT COLORS, FOR EASIER UNDERSTANDING, BUT THE CABLES ARE NORMALLY ALL BLACK DUE TO ULTRA VIOLET STABILITY. SO WHEN YOU WIRE IT, BE CAREFULL ON POLARITY OF CABLES.

6. SWITCH ON THE POWER SUPPLY AGAIN FOR SOLAR TRACKER (24VDC 5A)

7. CONNECT COMPUTER VIA USB CABLE TO THE POSITIONER MODEM MICRO AND RUN THE PROGRAM HELIOS ANALITICS. DISABLE AUTOMATIC TRACKING AND SET THE PARAMETERS THAT FIT TO YOUR LOCATION AND MODEL OF SOLAR TRACKER. INSTRUCTIONS FOR SETUP DRIVERS AND USE THE PROGRAM ARE IN NEXT PAGES OF THIS DOCUMENT OR IN SEPARATE DOCUMENTS NAMED: 1. OPERATING INSTRUCTIONS FOR HELIOS ANALITICS 2. INSTRUCTIONS FOR INSTALATION OF USB DRIVERS 3. INSTRUCTIONS FOR CONNECTION AND OPERATING OF SOLAR POSITIONER - CONTROLLER (PLC) MODEL MICRO.

8. ONCE ALL SET, ENABLE AUTOMATIC TRACKING WITH HELIOS PROGRAM. THEN THE TRACKER WILL START TO TRACK THE SUN IF ALL RIGHT, THEN DISCONNECT THE USB CABLE AND CLOSE THE JUNCTION BOX ON TRACKER. THE COMPUTER IS NO LONGER NEEDED FOR APROPRIATE FUNCTIONING OF SOLAR TRACKER, BECAUSE ALL THE DRIVING WITH CALCULATIONS RUNNING IN THE DEVICE CALED POSITIONER MICRO IN JUNCTION BOX.

9. CONNECT RS485 COMMUNICATION CABLE TO NETWORK FOR OVER-WIND SIGNAL AND REMOTE MONITORING. WITH HELP OF RS485 TO USB DONGLE, YOU CAN MONITOR UP TO 1 KM FAR AWAY. WHEN THE OVER-WIND SIGNAL IS COMMING VIA RS485 COMMUNICATION CABLE THE TRACKER MUST MOVE IN HORIZONTAL POSITION. IT IS FORBIDEN TO OPERATE THE TRACKER IF THE WIND FUNCTION IS NOT WORKING. IN CASE YOU DO NOT HAVE THE THE WIND SENSOR LEAVE THE TRACKER IN HORIZONTAL POSITION UNTILL YOU GET IT AND CONNECT WIND SENSOR. TEST THE FUNCTIONALITY OF WIND FUNCTION AND WHEN IS WORKING WELL YOU CAN OPERATE WITH SOLAR TRACKER.
IF YOU HAVE ONLY SIMPLE WIND SENSOR YOU CAN CONNECT IT ON THE SOLAR POSITIONER CONTROLLER DIRECTLY. THE DRAWING WHERE TO CONNECT IS IN NEXT PAGES. THEN YOU NEED TO RE-SET THE OVER WIND PARAMETERS TO WORK PROPERLY.

10. THE INSTALATION IS FINISHED. WE CONGRATULATE YOU THAT YOU SUCCESFULLY SETUP THE SOLAR TRACKER SM44M3V15P AND WE WISH YOU GOOD OPERATION IN FUTURE.

YOUR SAT CONTROL TEAM. WWW.SOLAR-MOTORS.COM WWW.SAT-CONTROL.NET

0153	1	Sestav / Assembly		25m2	N7	ISO 2768 M	Welding assembly with hot dip plating by EN ISO1461		Poženik: 25.11.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063901S3		SM44M3V15P	0153-A	1:20	1867.0LB g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL d.o.o. Poženik 10, SI-4207 CERKLJE, SLOVENIA-EU www.solar-motors.com

Description: Solar tracker SM44M3V15P for 15 panels (25m2)

File: SOL.TRA.SM44M3V15P / ASM.SM44M3V15P.SI14 | Latest version: V1 | Page: V1 | All rights reserved Copyright

Confidentional & Copyright !

Manufacturer:

SAT CONTROL d.o.o.
Poženik 10
SI-4207 CERKLJE
SLOVENIA – EUROPEAN UNION

Web site: www.solar-motors.com e-mail: info@solar-motors.com

INSTRUCTIONS FOR INSTALATION AND USE

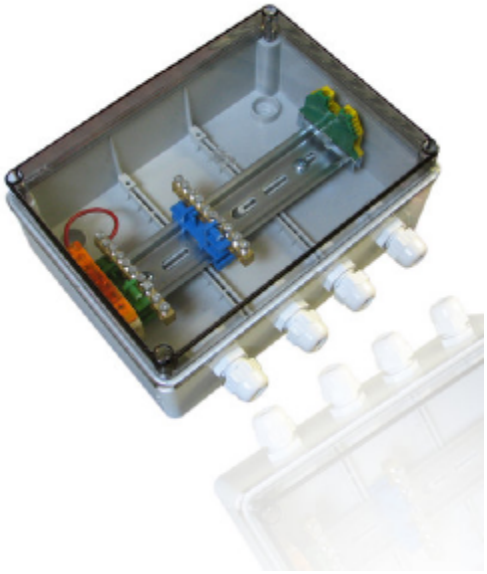
For: ASSEMBLY OF SET JUNCTION BOX WITH INSTALLED SOLAR POSITIONER CONTROLLER MICRO POZSOL36A IN AND 2 PCS CABLES FOR LINEAR MOTOR 2M AND 5M

Models: JBOXSETSPMN1-TC POZSOL36A1DR KABINTSM4M3L2OP KABINTSM4M3L5OP

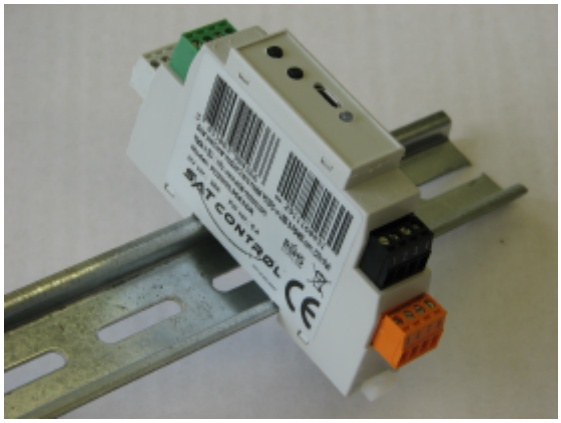
Codes: 3831063913047 3831063904366 3831063960492 3831063960690

WHICH INCLUDE FOLLOWING PRODUCTS BELOW:

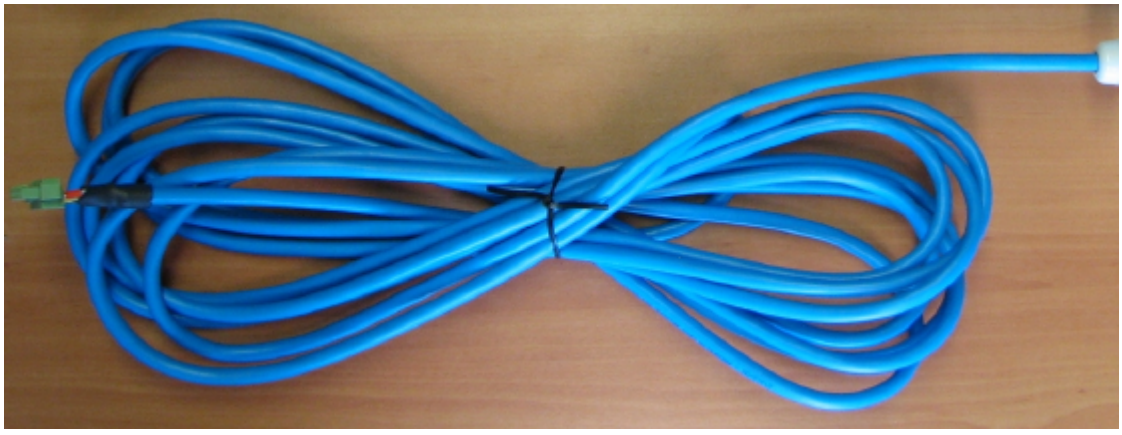
For: Set Jun. Box 190x140x70 w inst. sol. poz., DIN rail, glands, cable
Model: JBOXSETSPMN1-TC
Code: 3831063913047



For: Solar Positioner 2-axis mod. MICRO, USB-RS485, DIN rail
Model: POZSOL36A1DR
Code: 3831063904366

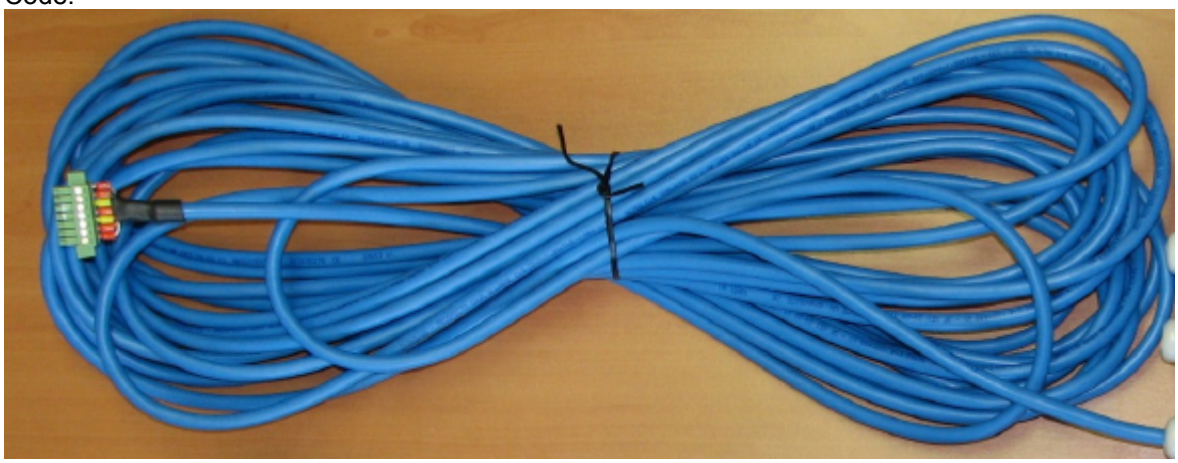


For: Int. Cable SM4M3 w con. 7pins->OPEN, L=2m 2x1+5x0.22
Model: KABINTSM4M3L2OP
Code: 3831063960492



For: Int. Cable SM4M3 w con. 7pins->OPEN, L=5m 2x1+5x0.22
Model: KABINTSM4M3L5OP

Code: 3831063960690



CAD DRAWING DISCLAIMER

CAD terms of use

All intellectual property rights (including, without limitation, all copyright and design rights) subsisting in the CAD drawings and related information belongs to SAT CONTROL d.o.o..

The USER may not, under any circumstances use or allow the use of CAD drawings with any product or system other than SAT CONTROL d.o.o. products or systems.

The reproduction and use of this material is only authorised for purposes connected with the specification or use of SAT CONTROL d.o.o. products and systems. The USER of this information is authorised to reproduce and distribute exact copies or exact extracts of CAD drawings for the sole purpose of detailing, specifying, using, and promoting the use of SAT CONTROL d.o.o. products and systems.

This information may not contain the full details required for construction. It is the USER's responsibility to ensure full construction performance specifications and to ensure specification and installation of solar tracker’s products and systems are in accordance with solar tracker’s technical datasheets or publications. Appropriate expert advice should always be obtained to ensure suitability of these drawings for your specific application.

SAT CONTROL d.o.o. accepts no responsibility or liability for any loss or damage caused to the USER or any third party through any use of the CAD drawings or related information, which use contravenes these terms of use, including but not limited to, any use of the CAD drawings and related information:

•(a) with any product or system other than SAT CONTROL d.o.o. Limited's products or systems; and
•(b) where the CAD drawings and related information are modified in any way.

The USER is deemed to accept these terms of use. IF YOU DO NOT AGREE

TO THE TERMS OF USE, DO NOT USE THE SAT CONTROL D.O.O. CAD DRAWINGS.

USAGE DISCLAIMER!

Terms of USE

All drawings and all documentation are copyright by SAT CONTROL d.o.o. and is marked as “Confidentional”

STEP 1: Unscrew the 4 pcs of screws and open the box and loose the main fuse (slow type)

STEP 2: Push through the gland the power supply cable and connect it where is written + plus and – minus. Be carefull to polarity. Do not forget to wire the grounding wire too where is written Shields – earthing. The outdoor cable need to be 3 wires with cross section of 3 x 2,5mm^2, isolation of 1000V, UV stable and powered with the 24V DC 5A. Do not forget to tight the gland on cable.

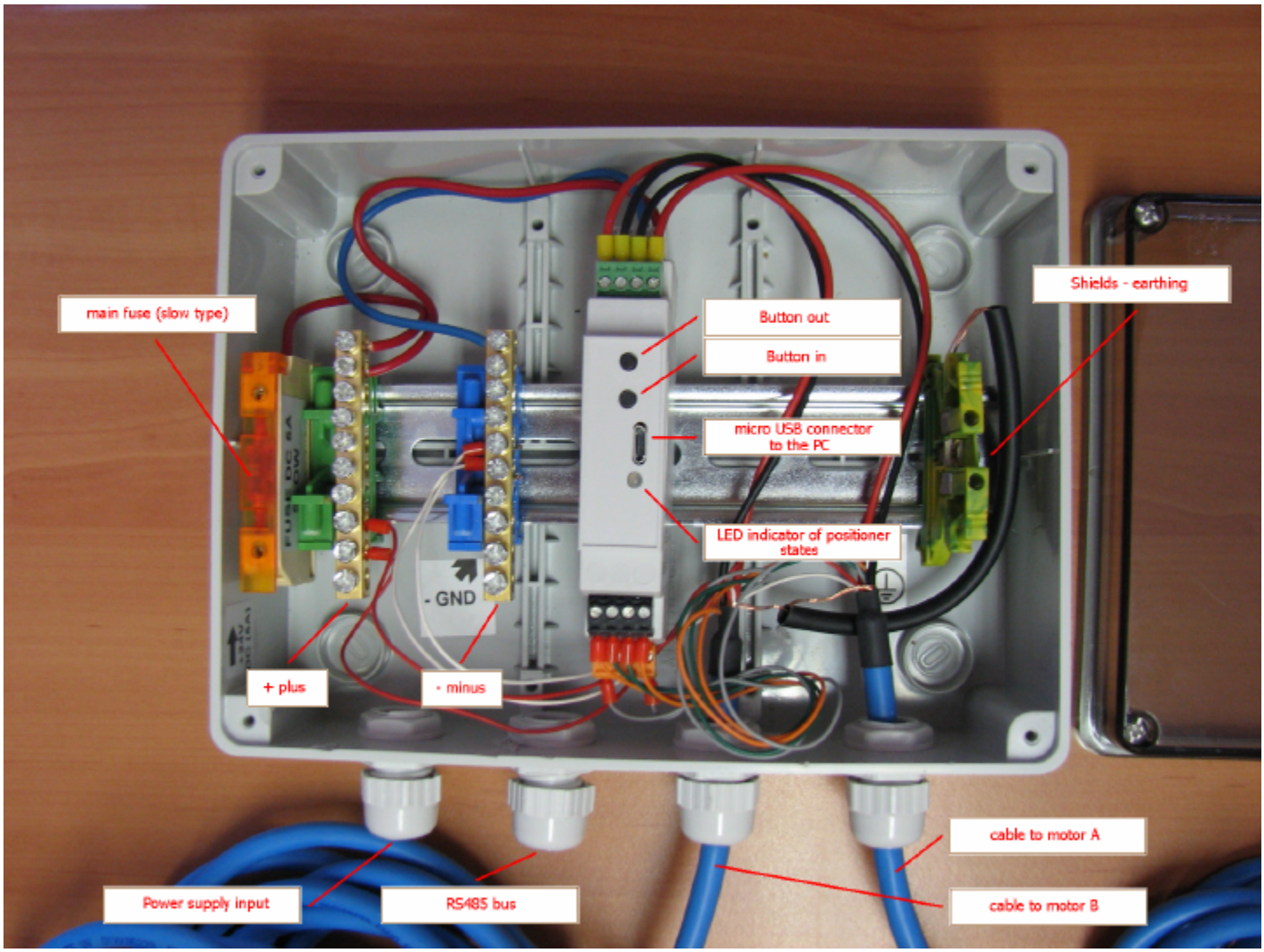
STEP 3: Push through the gland the RS485 cable. This is the 3 wires cable (one twisted pair and – minus pole) with the cross section of 3 x 0,25-0,5mm^2 depend from length. Connect it on the DIN rail positioner at port 11 signal RS485_B and port 12 the signal RS485_A (grey connector). Minus pole wire to the minus busbar. Do not forget to tight the gland on cable.

STEP 4: Connect the cable A to motor A and fix it with the 2 pcs of fixation screws on connector.

STEP 5: Connect the cable B to motor B and fix it with the 2 pcs of fixation screws on connector.

STEP 6: Connect the power supply on and switch on the main fuse (slow type). Try to move motor in with “button in” or out with “button out”. When is moving is ok.

STEP 7: Connect the positioner “MICRO” with computer with USB-A – Micro-B cable. Install USB driver and run Helios analytics program and make reference synchronizing for motor A and motor B to reset position counter on motors with electronics counters and manage several settings like mean solar time, location, … . How to install the USB driver and run Helios analytics program is described in other user manuals. At the end run the automatic tracking and close the box with cover and screws the box.

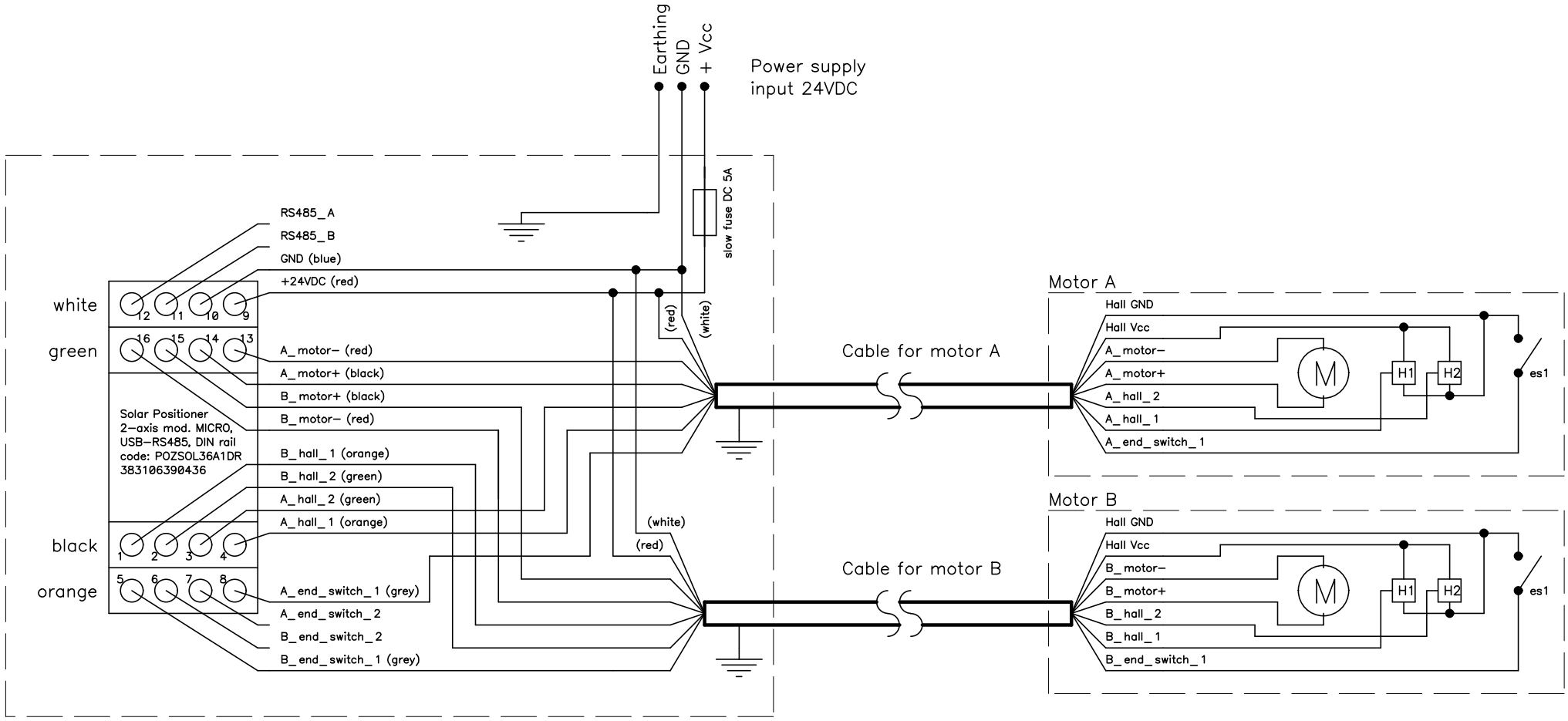


Date: 01-08-2011
Design approved by:
Director BOLKA BOGDAN ing.

COPYRIGHT ALL DRAWINGS! CONFIDENTIONAL ALL DRAWINGS!

Manufacturer: SAT CONTROL d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA-EU
Phone: +386 4 281 62 00, Fax: +386 4 281 62 13
www.solar-motors.com, mailto:support@sat-control.si; info@sat-control.si
Copyright. Product is patented and protecter by low of Intelectual property. SunTracer is registred trade mark of company Sat Control © All rights reserved!
SunTracer is registred trade mark of company Sat Control. © All rights reserved.
Made in Europe

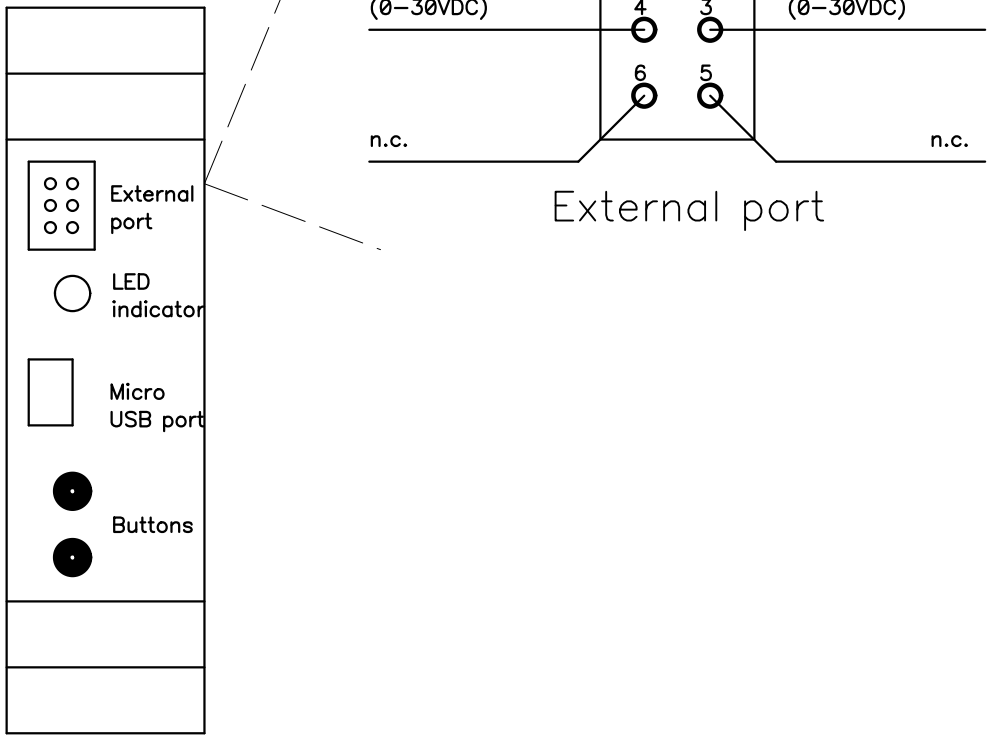
Box wiring for positioner MICRO (POZSOL36A)

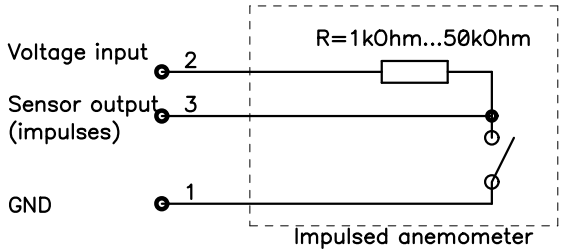


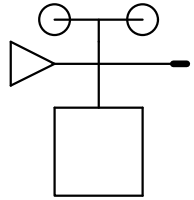
Set Pla. Box 190x140x70 w inst. sol. poz.,
DIN rail, glands, cable
code:SETBOXPSP1–TC
EAN: 383106391304

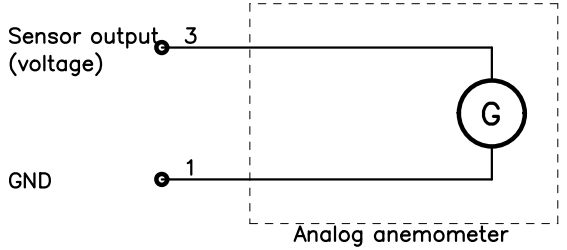
Title	Box wiring	
Size A3	Number	Rev
Date 22.7.2011		Drawn by Oman A.
Filename		Sheet of

Copyright Sat Control d.o.o.





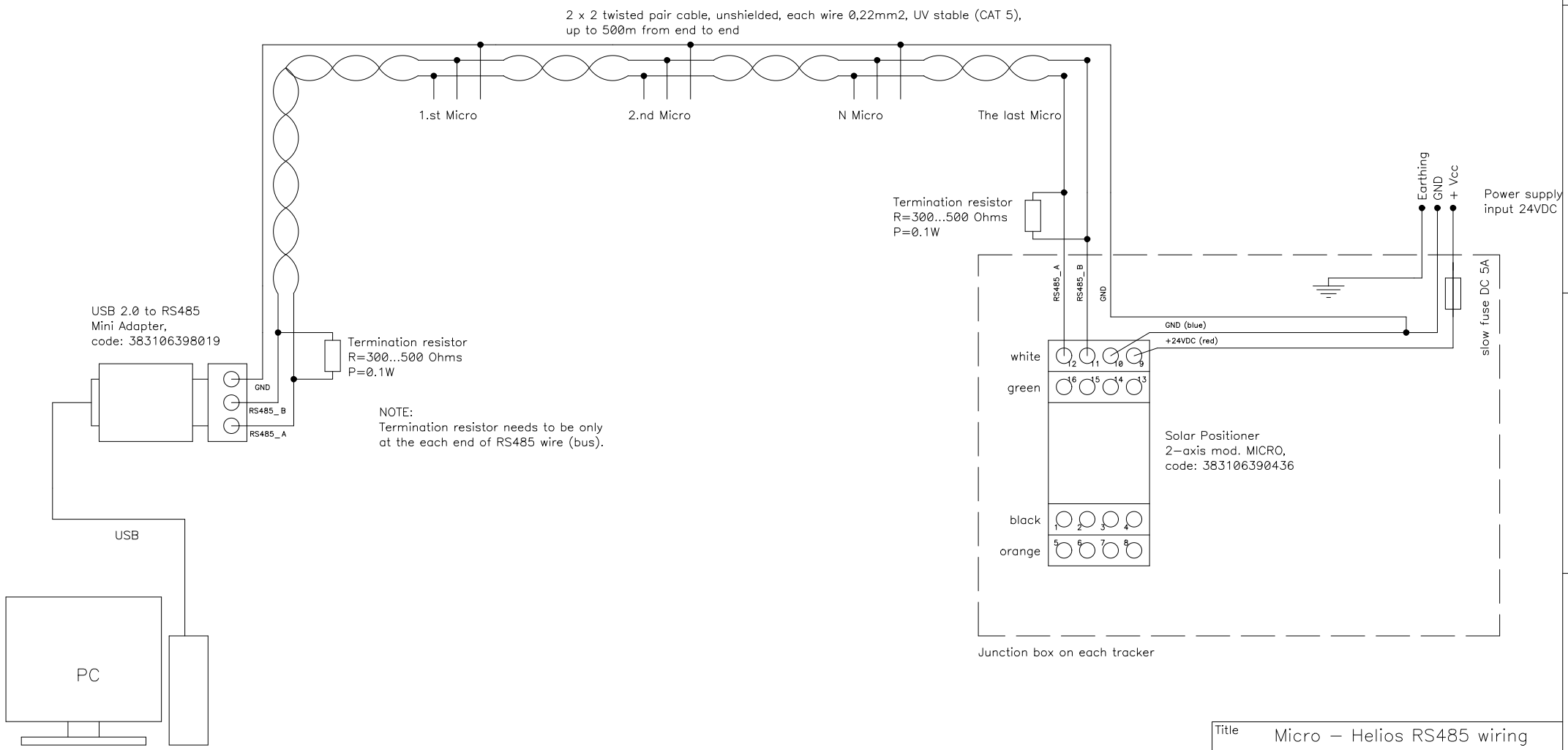




Wind sensor connection to Micro positioner (TIV36A)

Title: Wind sensor connection to Micro positioner		
Size: A4	Number:	Rev: 0
Date: 09.09.2011		Drawn by: A.Oman
Filename:		Sheet: of

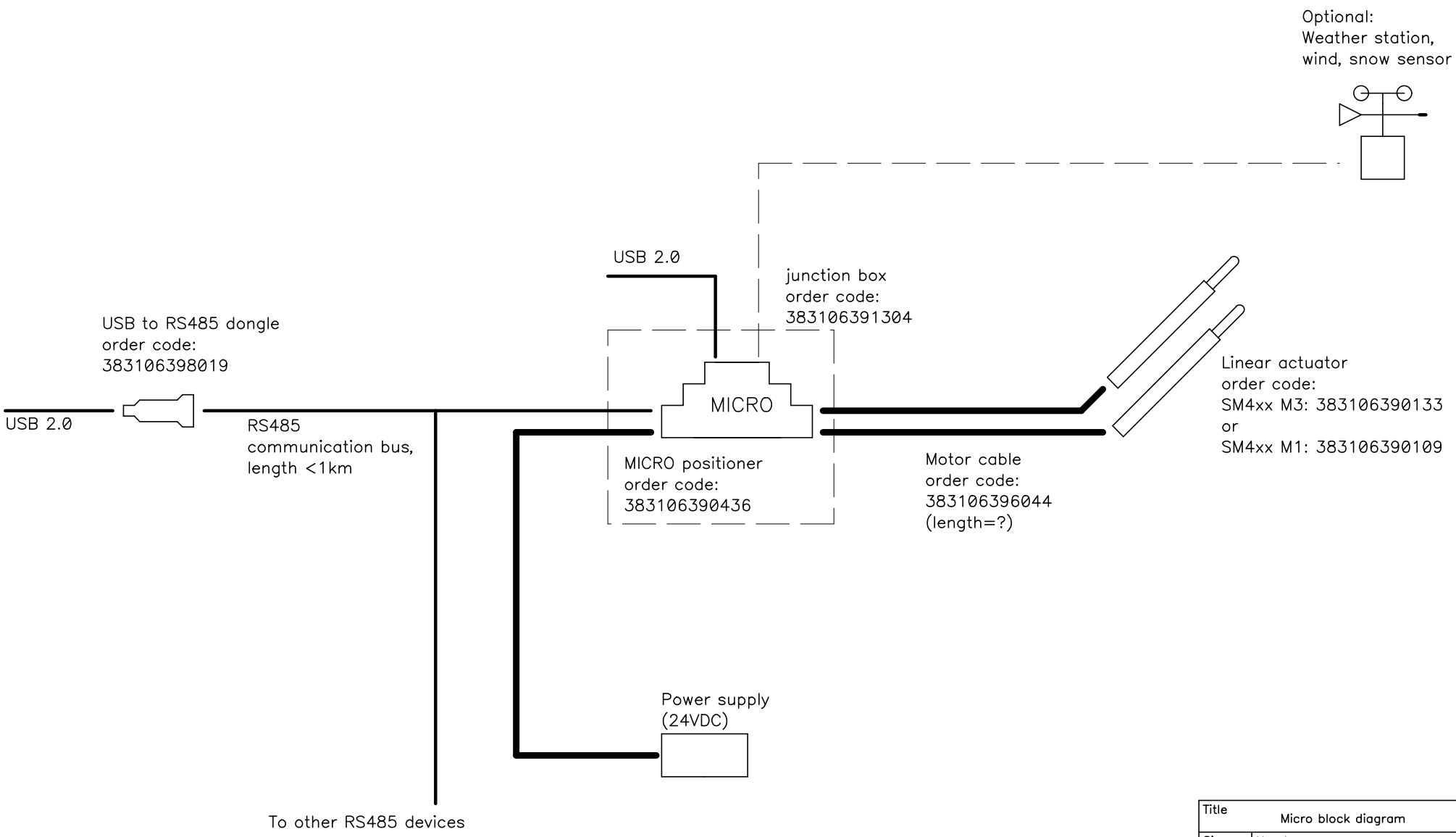
Monitoring Micro positioner using Helios Analytics program via RS485 bus – wiring diagram



Title	Micro – Helios RS485 wiring		
Size A2	Number		Rev
Date	11.10.11	Drawn by	Oman A.
Filename		Sheet	of

Copyright Sat Control d.o.o.

Block diagram of using single or few stand–alone solar trackers with Micro positioner



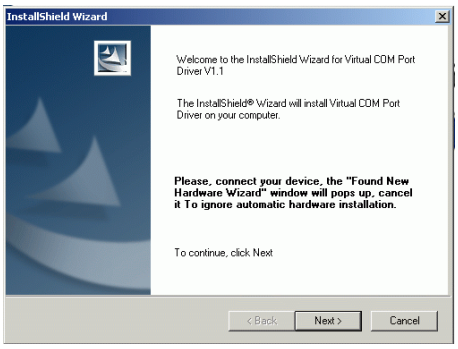
Title	Micro block diagram	
Size A3	Number	Rev 0
Date 15.9.2011		Drawn by A.Oman
Filename		Sheet of

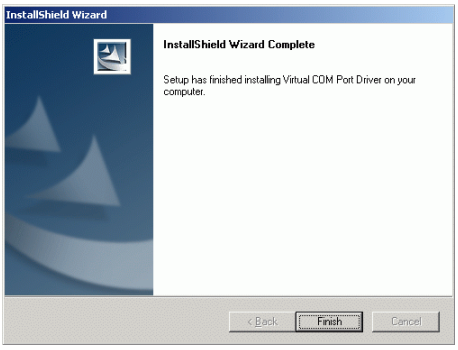
Copyright Sat Control d.o.o.

FIRST CONNECTION OF TRACKER TO A PC OVER AN USB CONNECTION – DRIVER INSTALLING

This document file was found in the archieve package on http://www.solar-motors.com/files/Helios/Helios%20analytics.zip . To properly setup the USB driver, please follow the next steps:

- Before connecting USB cable, run **VCPDriver_V1.1_Setup.exe,** which is included in the archieve package. Click »**Next**« and than »**Finish**«. Note, that you have to be an **administrator** to install a driver.

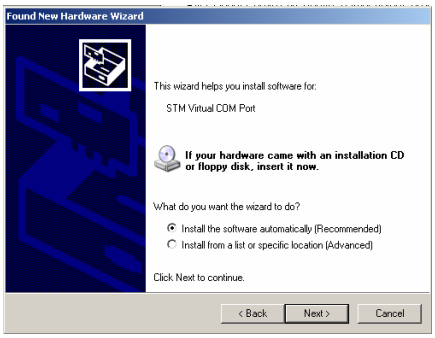

InstallShield Wizard
Welcome to the InstallShield Wizard for Virtual COM Port Driver V1.1
The InstallShield® Wizard will install Virtual COM Port Driver on your computer.
Please, connect your device, the "Found New Hardware Wizard" window will pops up, cancel it To ignore automatic hardware installation.
To continue, click Next
< Back
Next >
Cancel



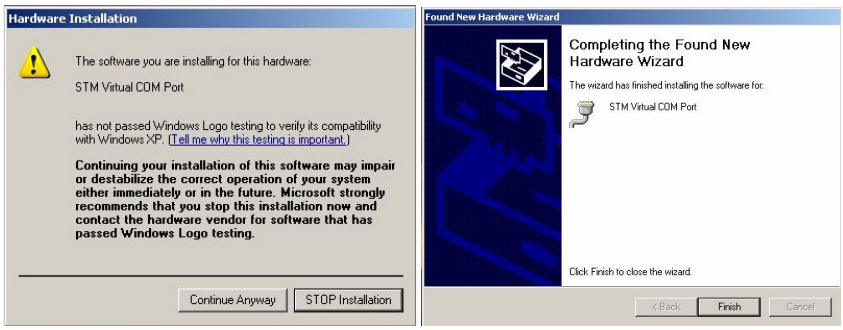
- Connect your PC to the tracker using the enclosed communication cable. Use the USB port on your computer.
- PC will require its driver installation.

- When the next window appear, click on »No, not this time« and than »**Install the software automatically**«.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel


Found New Hardware Wizard
This wizard helps you install software for:
STM Virtual COM Port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

• When Windows Logo testing, click on »**Continue Anyway**«. At the end click on »**Finish**«.


Hardware Installation
The software you are installing for this hardware:
STM Virtual COM Port
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation
Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
STM Virtual COM Port
Click Finish to close the wizard.
< Back
Finish
Cancel

• Properly installation can be seen in **Device Manager**. Device manager can be found by right clicking on "**My Computer**" icon, then select "**Properties**", select "**Hardware**".

• Remember the number of **COM port**. You will need to connect to the right COM port by **Helios Analytics**.

Manufacturer: SAT CONTROL d.o.o. Poženik 10, SI-4207 CERKLJE - SLOVENIA-EU
Phone: +386 4 281 62 00, Fax: +386 4 281 62 12
www.solar-motors.com, mailto:support@sat-control.si

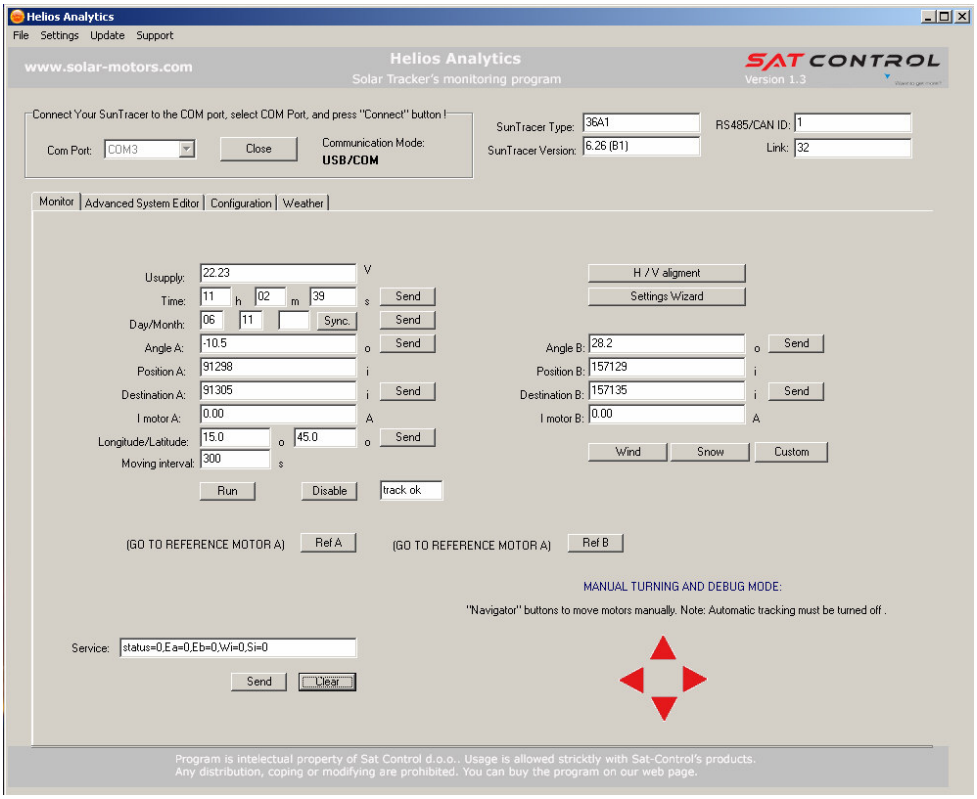
SunTracer is registered trade mark of company Sat Control. © All rights reserved.
Made in Europe
Copying is prohibited. Product is patented and protected by the Copyright Law.
SunTracer is a registered trade mark of the Sat Control © company. All rights reserved.

New to Helios?

Helios Analyitcs is PC program for managing and viewing Solar trackers parameters, made by Sat Control company. If you have never been using it, follow the next steps:

1. **Install USB driver ->** "USB driver" folder (see USB VCP driver installation.pdf).

2. After having proper COM port (Seen in "Device manager"), run **Helios Analytics.exe** in Helios Analytics folder


Helios Analytics
File Settings Update Support
www.solar-motors.com
Helios Analytics
Solar Tracker's monitoring program
SAT CONTROL
Version 1.3
Connect Your SunTracer to the COM port, select COM Port, and press "Connect" button !
Com Port: COM3
Close
Communication Mode:
USB/COM
SunTracer Type: 36A1
SunTracer Version: 6.26 (B1)
RS485/CAN ID: 1
Link: 32
Monitor | Advanced System Editor | Configuration | Weather
Usupply: 22.23 V
Time: 11 h 02 m 39 s Send
Day/Month: 06 11 Sync. Send
Angle A: -10.5 o Send
Position A: 91298 i
Destination A: 91305 i Send
I motor A: 0.00 A
Longitude/Latitude: 15.0 o 45.0 o Send
Moving interval: 300 s
Run
Disable
track ok
H / V aligment
Settings Wizard
Angle B: 28.2 o Send
Position B: 157129 i
Destination B: 157135 i Send
I motor B: 0.00 A
Wind
Snow
Custom
(GO TO REFERENCE MOTOR A)
Ref A
(GO TO REFERENCE MOTOR A)
Ref B
MANUAL TURNING AND DEBUG MODE:
"Navigator" buttons to move motors manually. Note: Automatic tracking must be turned off .
Service: status=0,Ea=0,Eb=0,Wi=0,Si=0
Send
Clear
Program is intelectual property of Sat Control d.o.o.. Usage is allowed stricktly with Sat-Control's products.
Any distribution, coping or modifying are prohibited. You can buy the program on our web page.

Manufacturer: SAT CONTROL d.o.o. Poženik 10, SI-4207 CERKLJE - SLOVENIA-EU
Phone: +386 4 281 62 00, Fax: +386 4 281 62 12
www.solar-motors.com, mailto:support@sat-control.si

SunTracer is registred trade mark of company Sat Control. © All rights reserved.
Made in Europe
Copying is prohibited. Product is patented and protected by the Copyright Law.
SunTracer is a registered trade mark of the Sat Control © company. All rights reserved.

Helios Analytics user manual

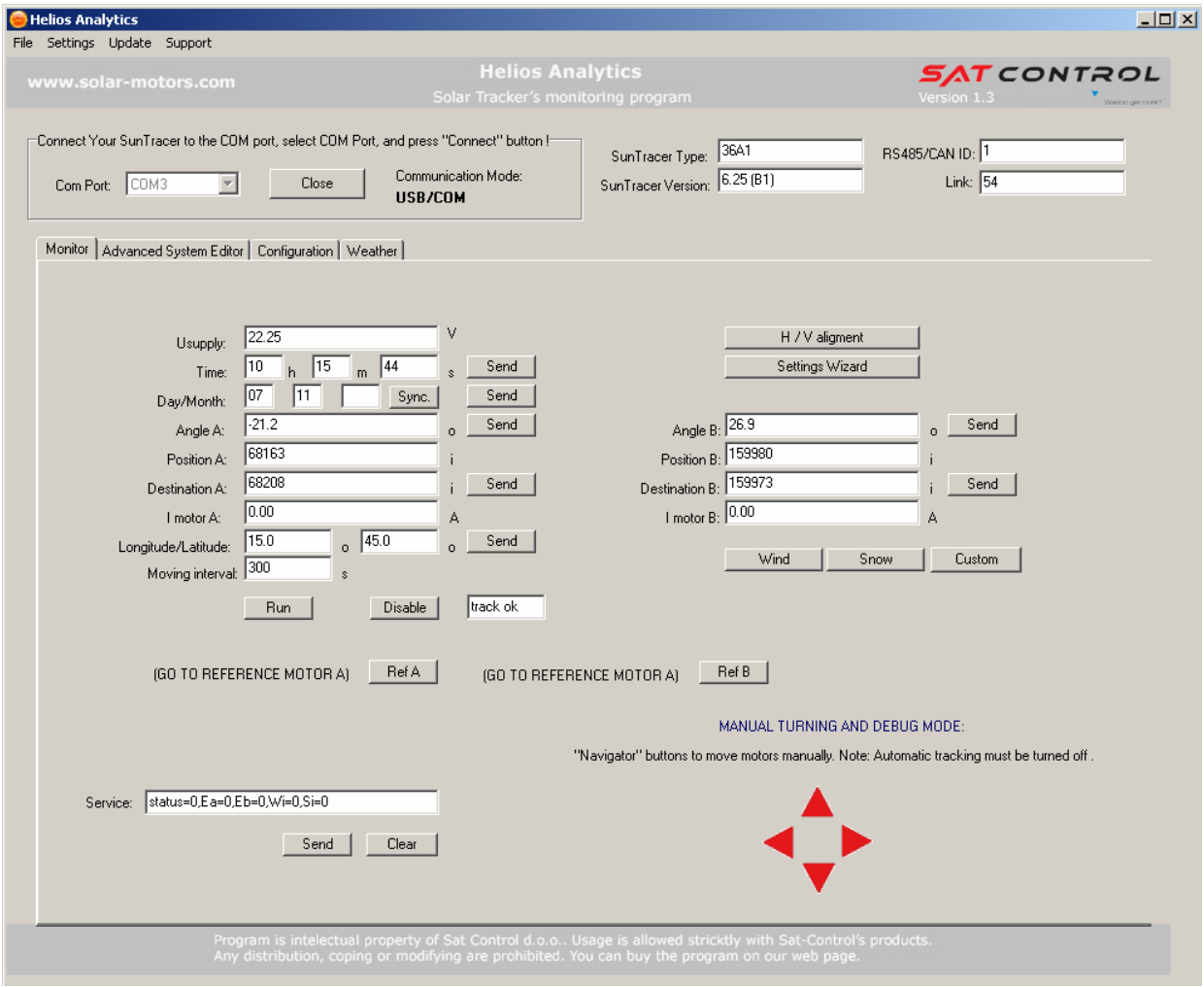
Document Rev. 0

The basic tracker operation is not conditioned by the use of a PC. But it provides additional functions that can be useful for advanced users. In addition, different values of the solar tracker can be seen in this menu.

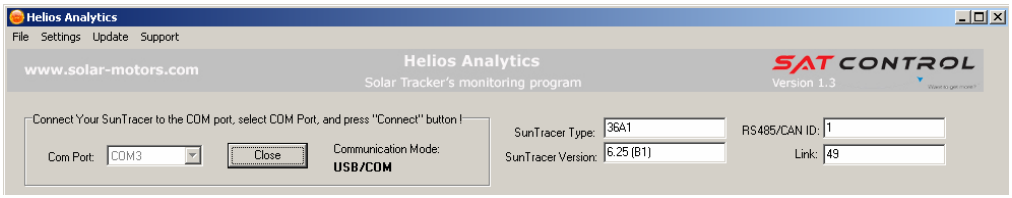
ATTENTION!! Changing the values in the menu may influence the solar tracker operation!

Each white input field displays the current value, i.e., the solar tracker setting. Clicking in a particular input field turns the field **yellow**, which means you can change the value. As long as the input field is yellow, you can enter a new value in it. When you are satisfied with the new value, press »**Enter**« or click the »Send« button. The entered value will be sent to the solar tracker, the input field will turn **white** again, and will show the **new** (changed) current value.

Some input fields are only intended to show the values and can not be changed (for example: supply voltage display). In such fields, a change will not take effect.

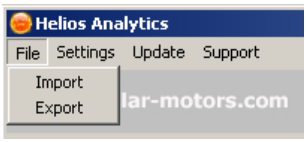


Helios's top row



1. Files

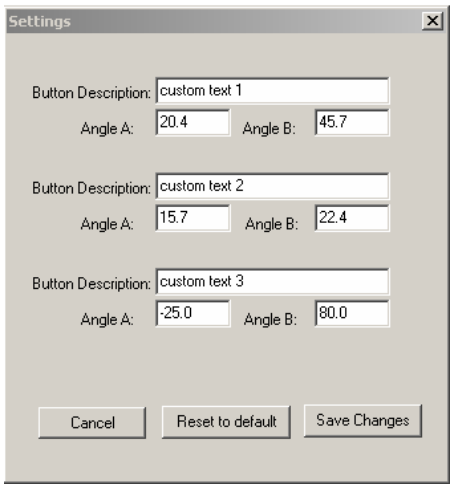
All values in the fields can be **exported** into one file with extension “hss”. This is suitable to backup current settings. It is also possible to **import** values from saved “hss” file.

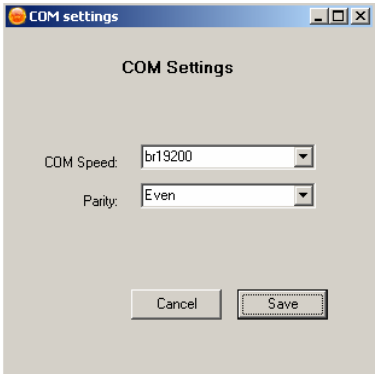


2. Settings

Angle settings define behaviour of three buttons in Monitor tab. See description at chapter 22.

COM port settings are communication properties for RS485 bus (excluding USB).

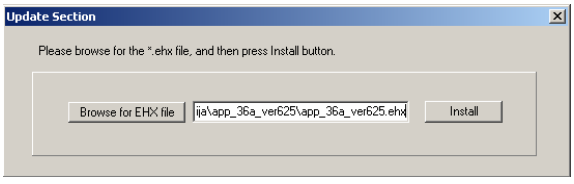


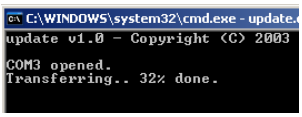


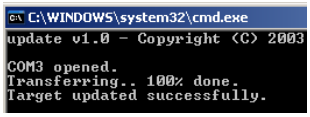
3. Update

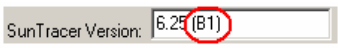
Driving electronic (firmware) in the solar tracker is **upgradable**. It means that we constantly complements and improves the program, which is running in your product. Check on our web site www.solar-motors.com for the latest version, tab »support« or direct path: http://www.solar-motors.com/gb/support-d24.shtml. If newer version exists, download and save zip file to your local disk. Unzip the file to some known location.

In the Helios select upgradeable file (*.ehx) and press update. Wait until transferring reaches 100%. Than close DOS prompt window and open COM in Helios again to continue. Later will be shown on the program new number of FW version if you done job well.









Note: Described feature is available only for versions “B1” and higher.

Others need to update manually. Manual updating is possible in any case. See upgrading manuals in the archive file.

4. Support

Info window with our contact informations.

5. COM port

Before getting any data from solar tracker, **select** proper **COM port** and press "**open**"

Note: you need to have USB (VCP) driver installed. Drivers are included in the archieve file.

6. SunTracer type

Type of electronic module inside the tracker. You will be asked about it if you will contact our service team.

7. SunTracer Version

Version of program running inside the module. After upgrading this number will be changed.

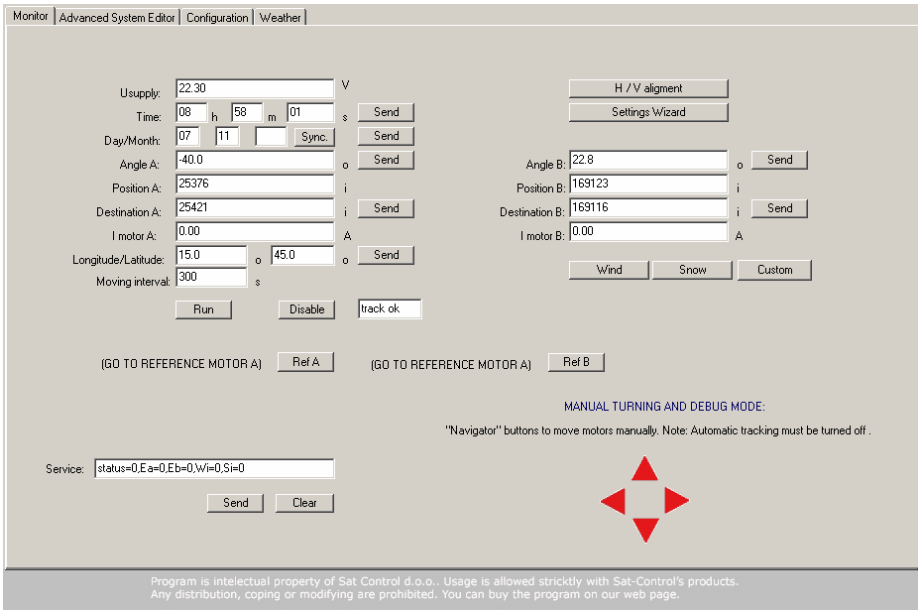
8. RS485 ID

Tracker's network address in RS485 network, which data are currently seen on »Helios«. To be used only when using RS485 network.

9. Link

Showing communication status. If this number is incrementing, Helios have a good connection to the Solar tracker. In opposite case check cables, re-plug connection.

Monitor tab



10. H/V alignment button

Pressing this button causes solar tracker to move in totally horizontal position. This is suitable when mechanically setup the tracker and to align correct angles.

Set angles will be: motor A = 0° and motor B = 90,0º. If panels (or mirror,...etc) are not in horizontal position after motor were stopped and some minor shift appear, you need to adjust mechanically (screws, clamps) to get proper horizontal position. For completely horizontal position, take spirit level as a sufficient measuring device.

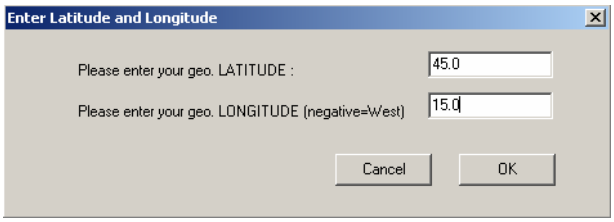
11. Settings wizard button

With it you can make a few basic settings required for Solar tracker to work. Click the »Settings Wizard« button.

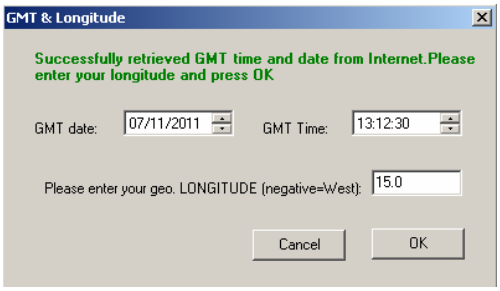
The system will ask you to enter a few basic geographical data items:

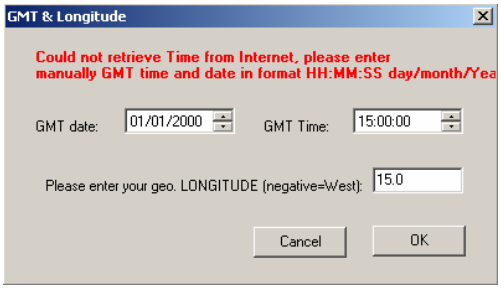
Your geographical **latitude** (geographical parallel). Positive values are for North hemisphere, negative for South hemisphere.

Your geographical **longitude** (meridian). Enter positive values for places east of Greenwich, and negative values for places west of Greenwich.



The last data item required by the wizard is the precise coordinated universal time (UTC, GMT). If you are connected to the internet, you will get it from there (green text). If so, just click on OK. Otherwise, you have to enter it manually (red text).





Now, the solar tracker is correctly set for your location. It will rotate to the current position and track the Sun from there.

12. Usupply

Current supply voltage connected to the solar tracker.

13. Time

Current solar time for your location (see geo. longitude/latitude). By entering new values, you can change the current time. Note that this time could differ from your zone time. It is correct only for your accurate geo longitude. The range for hours is 0-23, and minutes 0-60. Hint: if you set geo. longitude to 0.0, time must completely equal with UTC time.

14. Day/month

Current date. By entering new values, you can change the current date. The range for days is 1-31, and for months 1-12.

15. Synch button

Pressing the »Synch.« button automatically sets the current time and date. If your time or date is incorrect (by more than ten minutes), press the »Synch.« button to open a window for the input of your geographical longitude. Enter the longitude, and confirm it. The Web application connected to the internet calculates the coordinated universal time (UTC), and writes it in the solar tracker memory as the mean solar time for your location. If you are not connected to the internet, you will have to enter UTC manually in the next window.

Note: The mean solar time used by the solar tracker is set for your geographical longitude, and differs from your zone time. Therefore, do not worry if it differs by a few minutes from your time zone clock.

16. Angle A, B

They show current angle for each tracker shaft. Usually angle A means hour angle and angle B elevation. The hour angle has negative values in the morning and positive values in the afternoon. Direct angle entering causes manual turning of selected tracker shaft to the wanted angle (automatic tracking must be turned off).

17. Position, destination, A,B

They show the current and the destination positions of both trackers measured in pulses. These details can only be used to diagnose the solar tracker operation.

18. I motor, A,B

Show current of each motor at that moment.

19. Longitude, latitude

Mean your geographical longitude and latitude. They are both important in order to get proper tracking. Negative values mean »West« and »South«.

20. Moving interval

It means at what interval the solar tracker will correct its position to trace the sun. The possible values are from 60 in 900 seconds (1-15 minutes). If you have precision down to 0.1º, minimum limit is 1 second (instead of 60).

21. Run, disable buttons

With buttons you can enable or disable automatic tracking. Automatic tracking must be disabled, if you want to move each shaft manually - with red arrows below or by entering direct angle. Field on the righ denotes current state of automatic tracking:

» **track ok** « - automatic tracking enabled, the Sun is above the horizont, tracking is possible (according to mechanical range)

» **sun too far** « - automatic tracking enabled, Sun is unreachable (i.e. in the night)

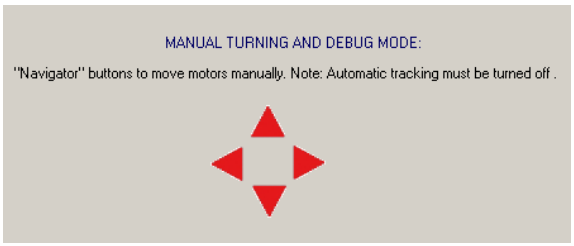
» **Disable** « - automatic tracking disabled

22. Wind, Snow, Custom buttons

These are predefined buttons with predefined angles. You can use them like emergency park position in strong wind weather or snow parking position for cleaning it from the panels or your custom park position. Pressing any of these buttons automatic tracking will become **disabled** and tracker will turn the panel into wanted position. You can **define** all three buttons by your own: go to "Settings" and press "Angle settings". Change text, angle A and angle B. See chapter 2.

23. Manual movements with buttons

With all 4 red buttons you can manually move both trackers. Only automatic tracking must be **disabled**.



24. Ref A, B buttons

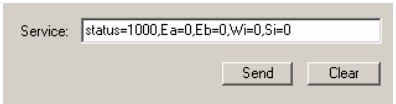
Use buttons to synchronize motors. In the case of any shift between real shaft position and internal counters (impulses) or after mechanic/electronic service synchronization needs to be done. After pressing each button, shaft runs to its reference position (home). After stopping the shaft is synchronized.

25. Service

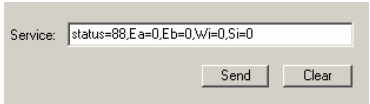
Field shows some service data, errors or similar. Useful when contacting our support team.

If status shows some error value and you already did solve the problem, click on "clear button" to enable motors again.

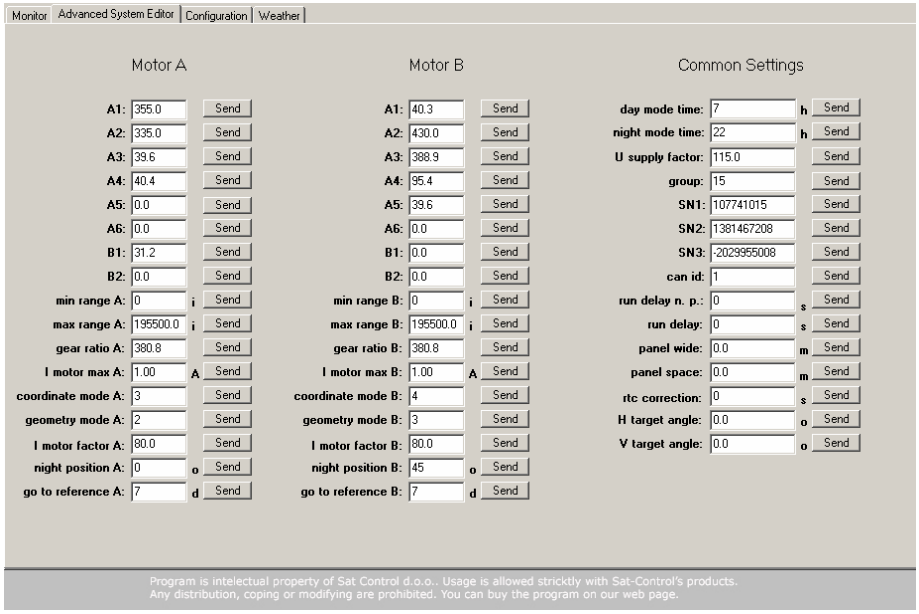
Normal moving:



Both motors have cable error:



Advanced system editor tab


Monitor
Advanced System Editor
Configuration
Weather
Motor A
A1: 355.0 Send
A2: 335.0 Send
A3: 39.6 Send
A4: 40.4 Send
A5: 0.0 Send
A6: 0.0 Send
B1: 31.2 Send
B2: 0.0 Send
min range A: 0 i Send
max range A: 195500.0 i Send
gear ratio A: 380.8 Send
I motor max A: 1.00 A Send
coordinate mode A: 3 Send
geometry mode A: 2 Send
I motor factor A: 80.0 Send
night position A: 0 o Send
go to reference A: 7 d Send
Motor B
A1: 40.3 Send
A2: 430.0 Send
A3: 388.9 Send
A4: 95.4 Send
A5: 39.6 Send
A6: 0.0 Send
B1: 0.0 Send
B2: 0.0 Send
min range B: 0 i Send
max range B: 195500.0 i Send
gear ratio B: 380.8 Send
I motor max B: 1.00 A Send
coordinate mode B: 4 Send
geometry mode B: 3 Send
I motor factor B: 80.0 Send
night position B: 45 o Send
go to reference B: 7 d Send
Common Settings
day mode time: 7 h Send
night mode time: 22 h Send
U supply factor: 115.0 Send
group: 15 Send
SN1: 107741015 Send
SN2: 1381467208 Send
SN3: -2029955008 Send
can id: 1 Send
run delay n. p.: 0 s Send
run delay: 0 s Send
panel wide: 0.0 m Send
panel space: 0.0 m Send
rtc correction: 0 s Send
H target angle: 0.0 o Send
V target angle: 0.0 o Send
Program is intelectual property of Sat Control d.o.o.. Usage is allowed stricktly with Sat-Control's products.
Any distribution, coping or modifying are prohibited. You can buy the program on our web page.

26. Coordinate mode

Means which coordinate system astronomic equations are using. General known is Azimuth-Elevation system (AE), other less know is Polar-Mount system (PM).

Note: In the case of using our tracker, parameters are already set.

which coordinate system to use		axis
1	AE system	azimuth
2	AE system	elevation
3	PM system	hour angle
4	PM system	polar elevation

27. Moving properties

Each motor uses some moving range measuring impuses by hall incremental encoder. **Max range** means maximum permited impulses, at which value motor will stop. Above, motor will be hard stopped . The same is for **min range** limit. Relation between impulses and degrees (slew drives) or milimeters (linear motors) is defined by gear ratio. **Gear ratio** is counted number of impulses by positioner per one degree or one milimeter.

Note: In the case of using our tracker, parameters are already set.

28. Geometries

Different trackers have different geometries. Geometry includes parameters **A1-A6, B1, B2** and number of selected geometry **geometry mode**.

Note:

- In the case of **using our tracker**, parameters are already set. **Do not change anything**.
- If you have **your own** tracker, see Geometry document available on our web side. Or contact our technical support.
- If Geometry mode is 0, this axis is not in use. Will not be controlled.
- Geometry mode parameters are fixed by purchasing conditions. Contact our sales team to add additional geometries.

29. Day mode time

Is the hour, when tracker starts to track. Before this hour it waits in the night position. It can be set between 1:00 and 12:00.

30. Night mode time

Is the hour, when tracker stops to track and goes to night position. It can be set between 14:00 and 23:00.

31. Night position

Is the position in degrees where the tracker will park during the night. This is between night mode and day mode time.

32. SN1,2,3

Are serial numbers of solar tracker positioner module. Usable when contacting our support team.

33. RS485 Id

Means ID number for RS485 bus. The tracker will respond only to this number. ID = 0 is broadcast for all trackers, no tracker will respond on this ID, but all will listen – suitable for set parameters in all trackers at once.

Note: changing ID during usage of RS385 mode, can cause communication lost. In this case set proper ID also in Helios or connect via USB to correct the values.

34. U supply factor and I motor factor

Are measuring factors for voltage and motor current in “web monitor”. We do not encourage you to change these values.

35. Anti-shadowing

Applies only to solar plants, where many trackers are mounted close together in the East-West line. In the morning and in the evening even a small shadow from neighbor panels could dramatically reduce output power of the panel. This effect appears when one cell inside serial chain is in shadow, causing all cells in serial chain to fail with power. Some panels have bypass diode. Or tracker should move in opposite direction to eliminate any shadow. And this way our tracker does.

Write panel width into **panel width** field and distance between trackers (in E - W line) into **panel spacing** field. If any of those two fields are 0, function is disabled.

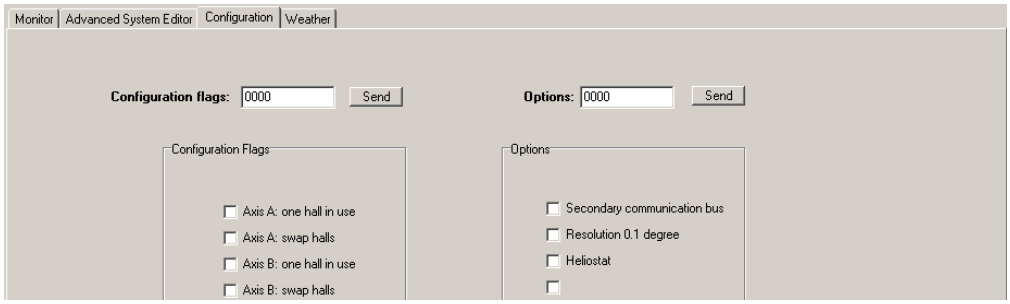
36. RTC correction

Applies to real time clock divergence. If time is faster or slower than real solar time (expected difference is a minute per month or more), than you can set this value to correct this divergence. Value means add or subtract one second every N days (N is a value). Negative value will subtract one second, positive will add.

37. H/V target angle

Applies only to Heliostats. Means horizontal and vertical angle at which solar tracker sees the target. Target is the point in a front of the tracker, where you want to have a spot. Positive angles are up from the horizon (vertical direction) and west from the south (horizontal direction). Negative are below the horizon (vertical direction) and east from the south (horizontal direction).

Configuration tab



38. Configuration flags

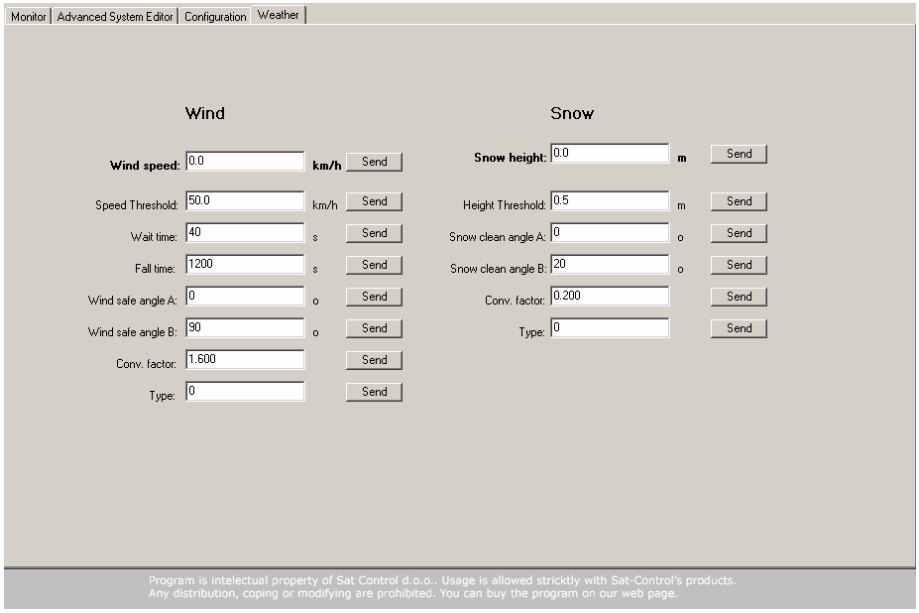
Refers on mechanical configuration for which the motor was made. This is not meant to be changed by user.

39. Options

Show which additional features and functions are opened. Those features user can buy for additional payment. They are not included by default. Field is read only, it can’t be changed.

Weather tab

Configures wind and snow sensor.


Monitor
Advanced System Editor
Configuration
Weather
Wind
Wind speed: 0.0 km/h Send
Speed Threshold: 50.0 km/h Send
Wait time: 40 s Send
Fall time: 1200 s Send
Wind safe angle A: 0 o Send
Wind safe angle B: 90 o Send
Conv. factor: 1.600 Send
Type: 0 Send
Snow
Snow height: 0.0 m Send
Height Threshold: 0.5 m Send
Snow clean angle A: 0 o Send
Snow clean angle B: 20 o Send
Conv. factor: 0.200 Send
Type: 0 Send
Program is intelectual property of Sat Control d.o.o.. Usage is allowed stricktly with Sat-Control's products.
Any distribution, coping or modifying are prohibited. You can buy the program on our web page.

40. Wind

If the wind is strong enough, it could damage the panels. Therefore it is suitable to move the panels into **wind save position** (normally in horizontal position), when wind is over **speed threshold**. **Wind speed** is output data of the measuring wind speed. **Conversion factor** is factor of wind sensor, meaning how much speed causes 1 revolution per second (at impulsed type) or how much speed causes 1 volt.

Type means output type of the sensor:

0 – disabled,

1 – wind sensor with impulsed output,

2 – voltage output.

41. Snow

When snow sensor is **threshold**-ed, the tracker will move into **snow clean angle** in order to push snow to fall down (normally in vertical position). **Snow height** is current snow height. **Conversion factor** is factor of snow sensor, meaning which height causes 1 volt on sensor's output.

Type means output type of the sensor:

0 – disabled,

1 – voltage output.

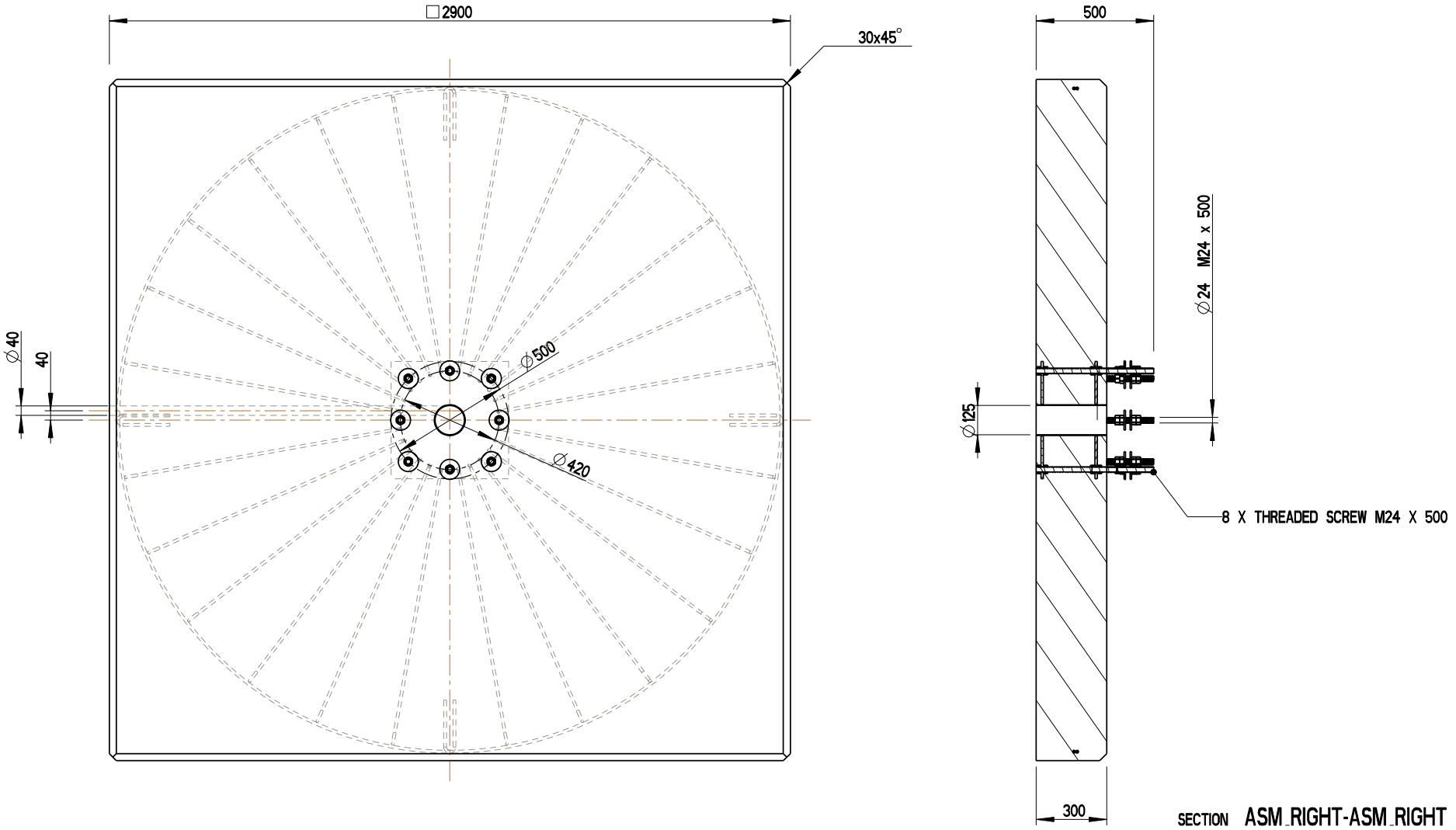
Manufacturer: SAT CONTROL d.o.o. Poženik 10, SI-4207 CERKLJE - SLOVENIA-EU
Phone: +386 4 281 62 00, Fax: +386 4 281 62 12
www.solar-motors.com, mailto:support@sat-control.si

SunTracer is registred trade mark of company Sat Control. © All rights reserved.
Made in Europe
Copying is prohibited. Product is patented and protected by the Copyright Law.
SunTracer is a registered trade mark of the Sat Control © company. All rights reserved.

Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of elem. on drw:	No. of changes:	Date:	Checked & approved by:



7327	1	Assembly / Sestav	2900x2900x300	N7	ISO 2768 M	Welding assembly covered with concrete mass		
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J. / Bolka B.	3831063973 27		BPSM44M3V15P	7327-A	0,040	105495,320 g
Drawed by:		Checked by: / Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL Want to see more?

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Concrete basement for solar tracker SM44M3V15P for 15 pan (25m2)

File: BET_TEM.SM44M3V15P / BET_TEM.SM44M3V15P

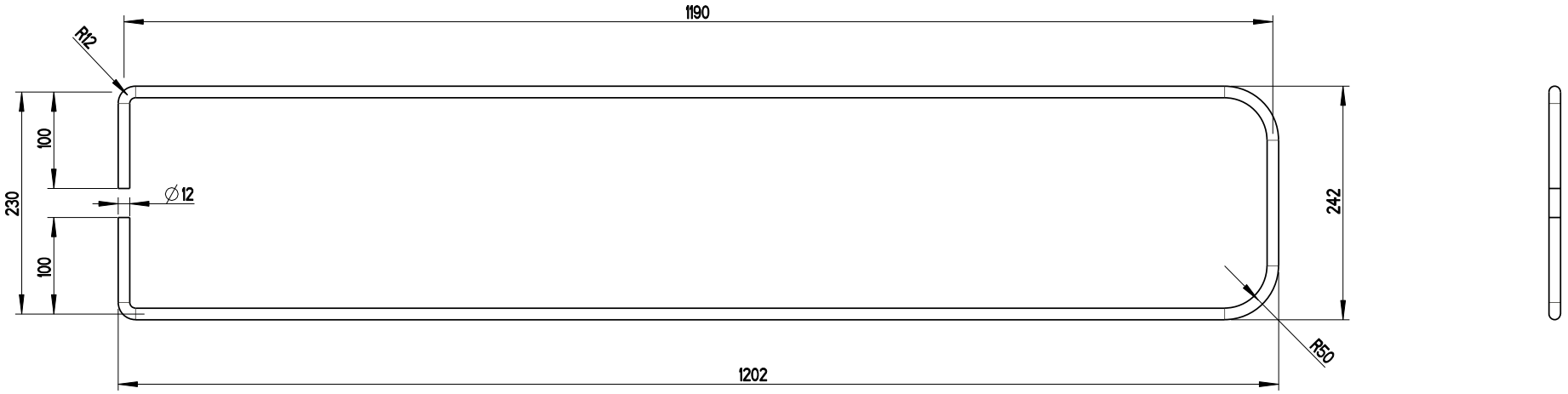
Latest verison:	Date:	Page:
V1	22.06.12	1/1

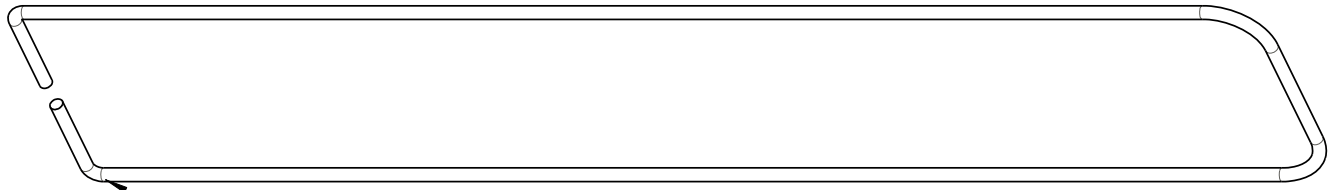
Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of elem. on drw:	No. of changes:	Date:	Checked & approved by:





BAR WITH RIBS ∅12
MAT: ST52-3

7329	1	ST52, dia: 12mm		DIA 12 MM	N7	ISO 2768 M	ST52, dia: 12mm		
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063973329		UPJABPSM44M3V15P	7329-A	0,150	2438,154 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: U-bended bar for concrete basement of SM44M3V15P

File: PAL.U.JEK.ARM.TEM.SM44M3V15P / PAL.U.JEK.ARM.TEM.SM44M3V15P

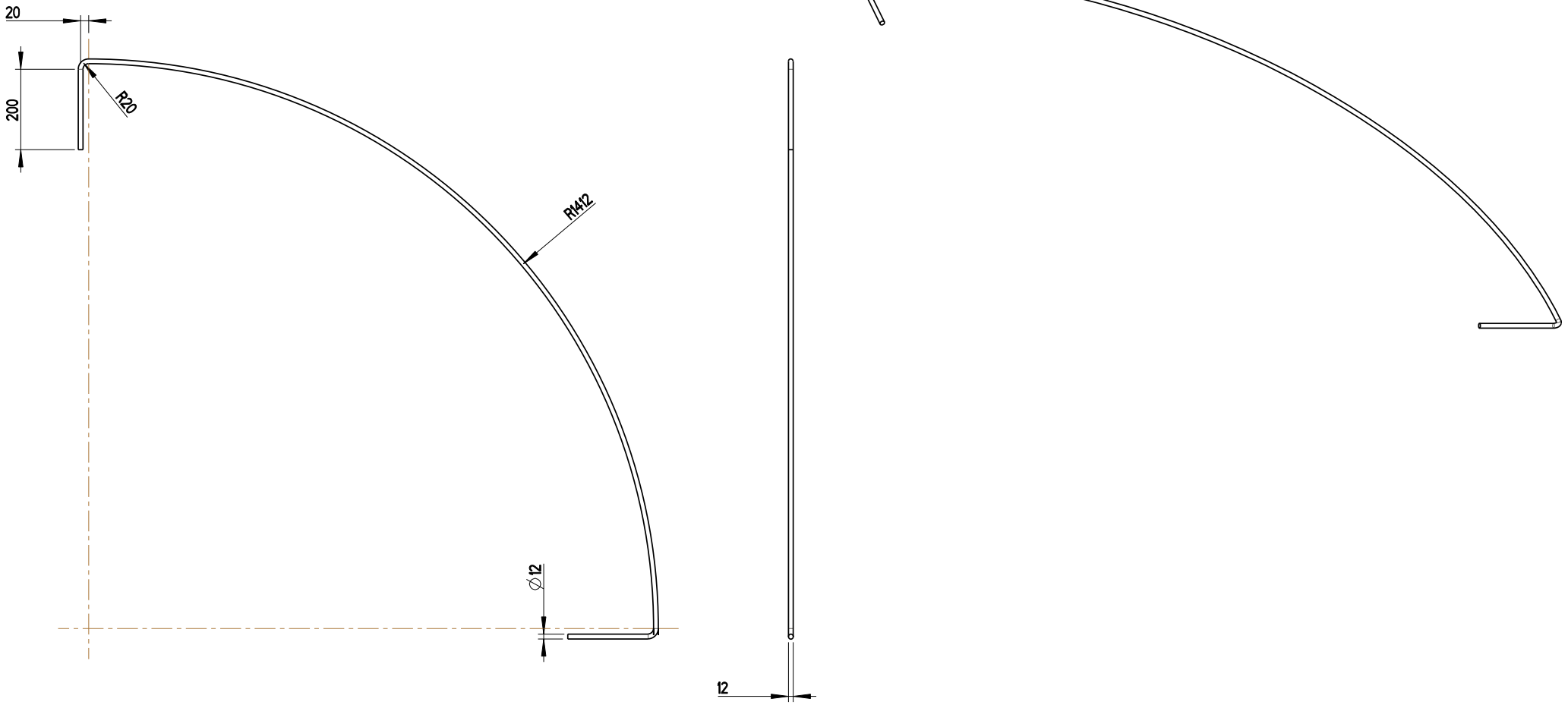
Latest verison:	Date:	Page:
V1	22.06.12	1/1

Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of clan. on drw:	No. of changes:	Date:	Checked & approved by:



7330	1	Wn 1.0052, ST52, S355J2H		DIA 12 MM	N7	ISO 2768 M	ST52, dia: 12mm		
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063973330		OJABPSM44M3V15P	7330-A	0,070	2370,953 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Round bar for concrete basement of SM44M3V15P

File: OBR.JEK.ARM.TEM.SM44M3V15P / OBR.JEK.ARM.TEM.SM44M3V15P

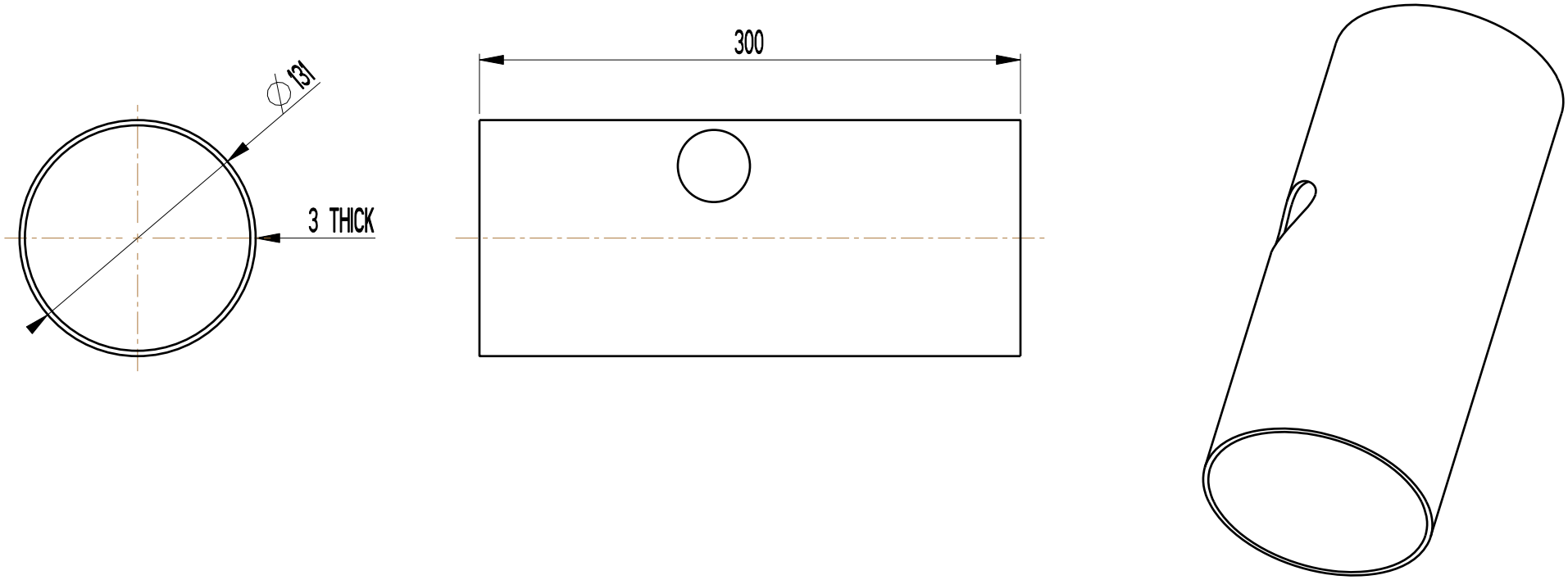
Latest verison:	Date:	Page:
V1	22.06.12	1/1

Copyright Sat Control d.o.o. -------- Confidentional !

Copyright Sat Control d.o.o. -------- Confidentional ! Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of chan. on drw.:	No. of changes:	Date:	Checked & approved by:



7331	1	PVC tube	ID125x3-300	N7	ISO 2768 M	PVC tube		Pozenik: 06.07.11
Position:	Quantity:	Material:	Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J. / Bolka B.	3831063973331		CPND125X3-300	7331-A	3:10	378,075 g
Drawed by:		Checked by: / Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL Want to see more?

Description: Plastic tube inner dia: 125x3 L-300

File: CEV.SRE.JEK.ARM.TEM.SIM44M3V15P / CEV.SRE.JEK.ARM.TEM.SIM44M3V15P

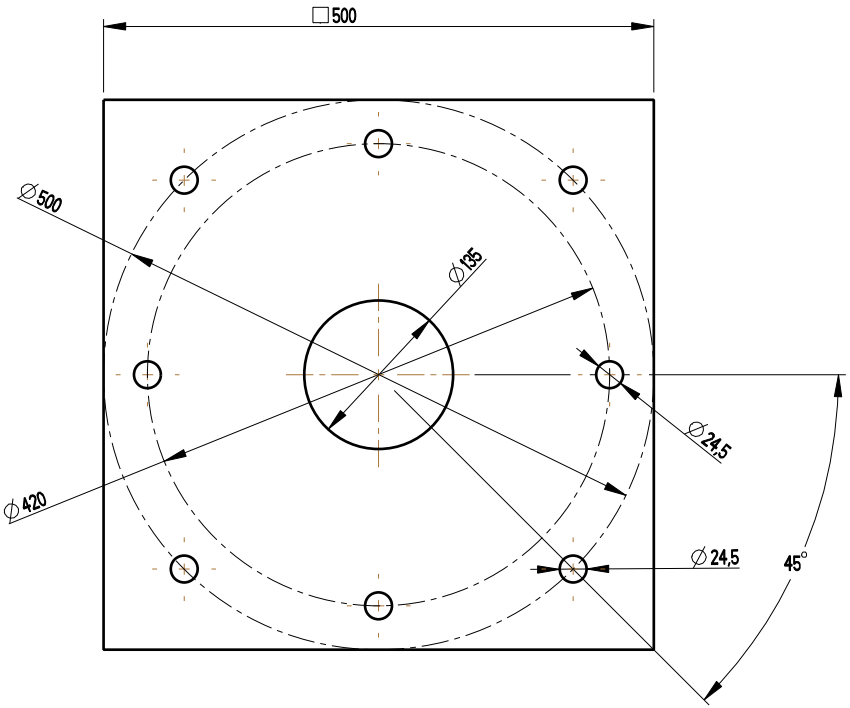
Latest verison: V1

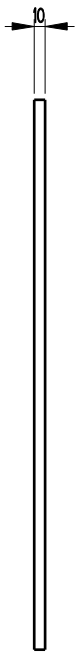
Page: 1/1

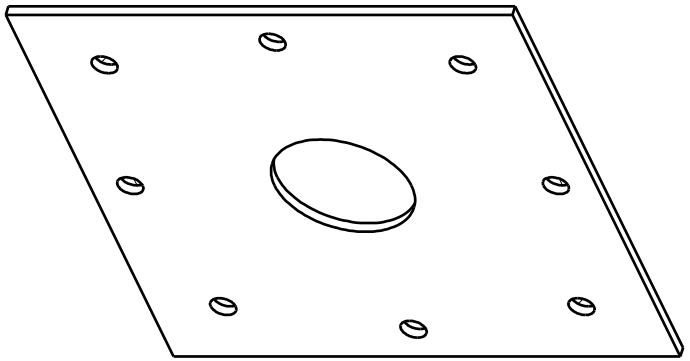
Copyright Sat Control d.o.o. -------- Confidentional ! Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of chan. on drw:	No. of changes:	Date:	Checked & approved by:







7328	1	RST 37-2 t:10mm		500x500x10	N7	ISO 2768 M	RST 37-2			Pozenik: 14.12.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:			Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063973 28		LRDPVJASM44M3V15P	7328-A		0,150	19135,725 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:		No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to see more?"
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Steel clamping plate for basement armature of SM44M3V15P

File: PLO.VPE.JEK.ARM.SM44M3V15P / PLO.VPE.JEK.ARM.SM44M3V15P

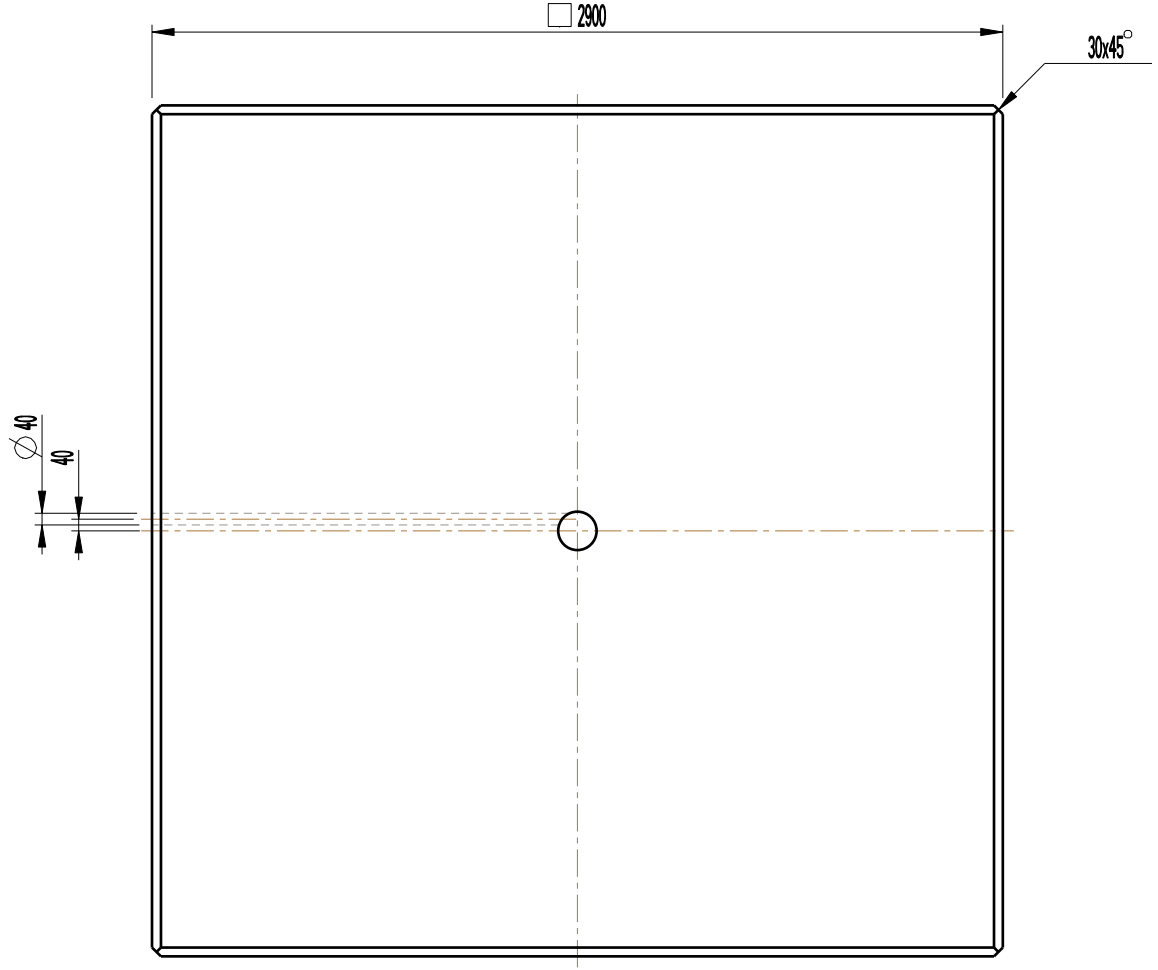
Latest verison: V1

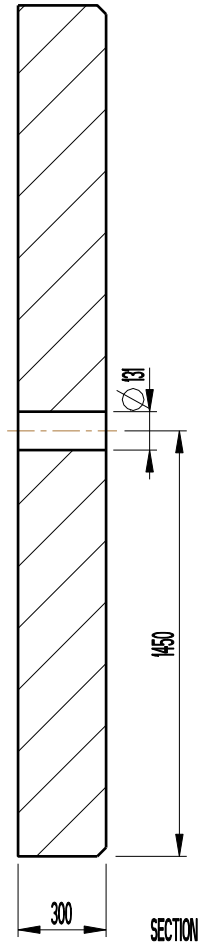
Page: 1/2

Copyright Sat Control d.o.o. -------- Confidentional ! Copyright Sat Control d.o.o. -------- Confidentional !

Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

No. of chan. on drw.:	No. of changes:	Date:	Checked & approved by:





SECTION RIGHT-RIGHT

7327	1	Concrete block		2900x2900x300	N7	ISO 2768 M	Beton / Concrete		Pozenik: 06.07.11
Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
Bolka B.		Bolka J.	Bolka B.	3831063973 27		BETSM44M3V15P	7327-A	0,040	25154 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code *2:	No. of drawing:	Scale:	Mass:

SAT CONTROL Want to see more?

Description: Concrete block for solar tracker SM44M3V15P for 15 pan. (25m2)

File: BET_TEM.BLOK.SM44M3V15P / BET_TEM.BLOK.SM44M3V15P

Latest verison: V1

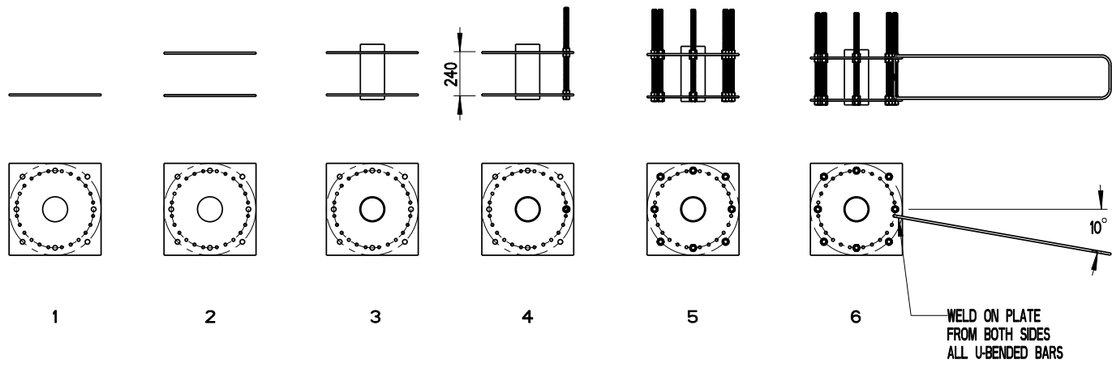
Page: 1/1

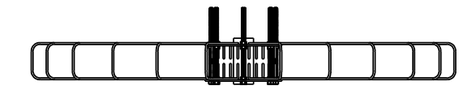
Copyright Sat Control d.o.o. --------- Confidentional !
Copyright & Confidentional !
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA (EU) www.sat-control.si / info@sat-control.si

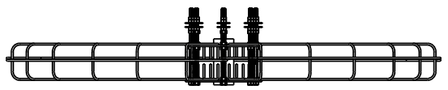
No. of chan. on chn:	No. of changes:	Date:	Checked & approved by:

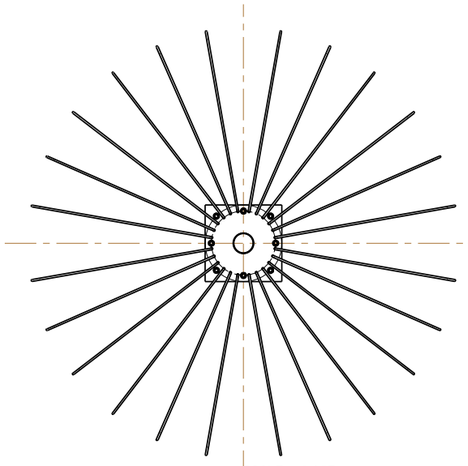
INSTRUCTIONS HOW TO PREPARE THE STEEL REINFORCEMENT CAGE FOR CONCRETE BLOCK

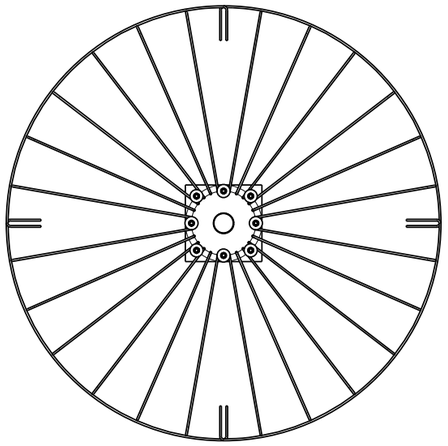
FOLOW STEPS: 1. ASSEMBLE AS FOLOW STEPS BELOW. 1 - 5 ASSEMBLE AND TIGHT WITH NUTS, 6 - 8 ASSEMBLE AND WELD TOGETHER

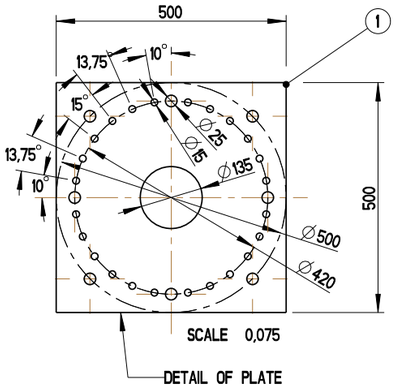


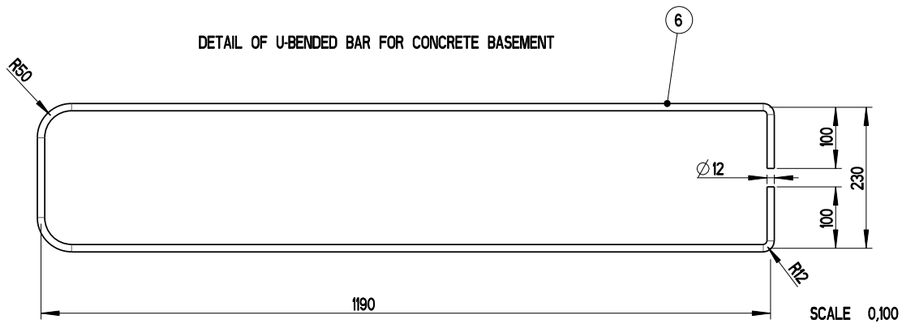


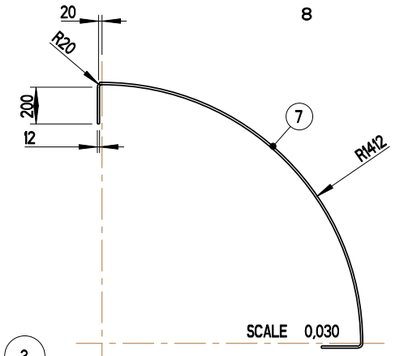


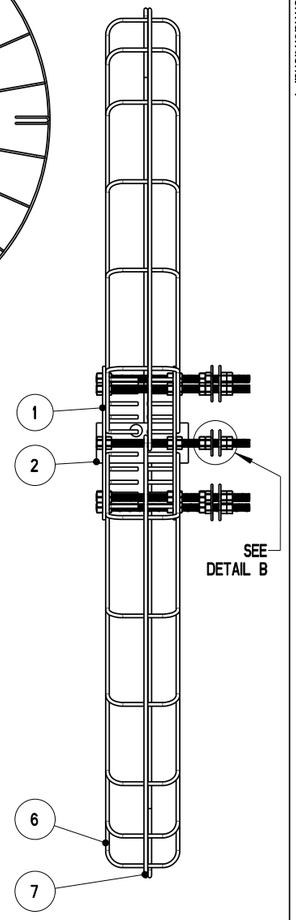


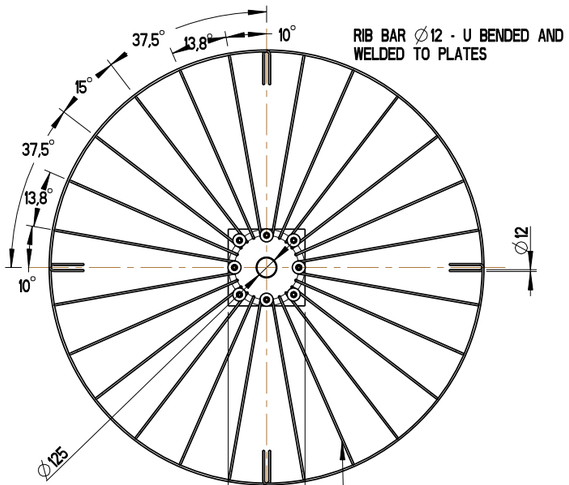


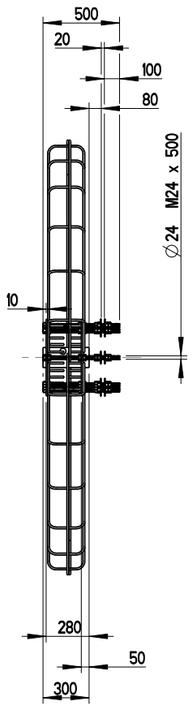


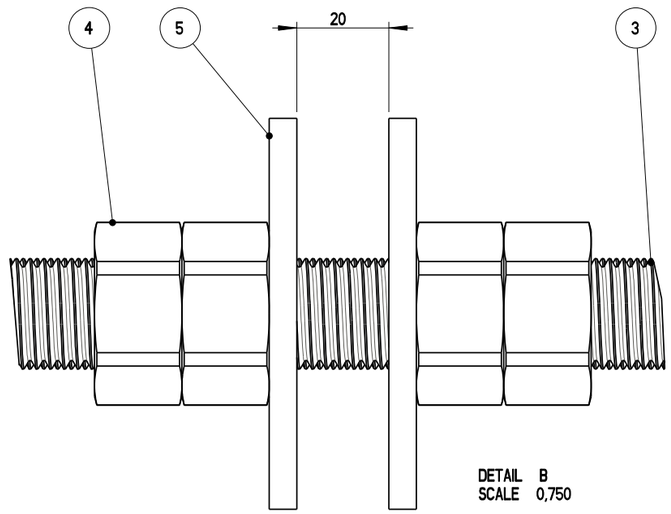












A-Z:	Qty:	Code:	Description:
7	4	383106397330	Round bar for concrete basement of SM44M3V15P
6	24	383106397329	U-bended bar for concrete basement of SM44M3V15P
5	16	DIN440M24	Washer (wide) M24 DIN440R ZN
4	64	DIN934M24	Nut M24 DIN934 Fe/Zn 12um
3	8	DIN976M24-L0.5M	Theraded bar M24x500 KV: 8.8 galvanized
2	1	383106397331	Plastic tube inner dia: 125x3 L:300
1	2	383106397328	Steel clamping plate for basement armature of SM44M3V15P

Position:	Quantity:	Material:		Size:	Open roughness:	Open tolerances:	Treathment & Remarks:		Place & Date:
7316	1	Wn 1.0052, ST52, S355J2H		D2800x500	N7	ISO 2768 M	Welding construction together / Varjena konstrukcija skupaj		
Bolka B.		Bolka J.	Bolka B.	383106397316		JASM44M3V15P	7316-A	0,030	70699,350 g
Drawed by:		Checked by:	Approved by:	EAN code / standard:		Code #2:	No. of drawing:	Scale:	Mass:

SAT CONTROL
Want to learn more?
Sat Control d.o.o. Pozenik 10, SI-4207 CERKLJE - SLOVENIA - EU

Description: Iron-reinforcement cage for SM44M3V15P for 15 pan. (25m2)

File: JEK.ARM.ZA.TEM.BLOK.SM44M3V15P / JEK.ARM.ZA.TEM.BLOK.SM44M3V15P

Latest version:	Date:	Page:
V1	22.06.12	1/1

Copyright Sat Control d.o.o. --------- Confidentional !
Copyright Sat Control d.o.o. --------- Confidentional !
Copyright Sat Control d.o.o. --------- Confidentional !